

# Exhibit K



**Kazan, McClain, Satterley  
& Greenwood<sup>SM</sup>**

A Professional Law Corporation

KAZANLAW.COM



February 28, 2023

## **IMPORTANT DEPOSITION INFORMATION**

**Via File&Serve Xpress**

All Defense Counsel

Re: ***Anthony Hernandez-Valadez v. Johnson & Johnson, et al.***  
Alameda County Superior Court Case No. 22CV012759

Dear Counsel:

Attached please find Dr. Longo's MAS Project M71614, Talcum Powder Analysis, Valadez – J&J Baby Powder Container.

**Dr. William Longo's** deposition will go forward on **Friday, March 3, 2023 at 7:30 a.m. PT.**, accepted by accepted by Johnson & Johnson.

Very truly yours,

/s/ Jazmin Solorzano-Arroyo

Jazmin Solorzano-Arroyo

Litigation Paralegal

JS:js

**ATLANTA**  
Corporate Headquarters  
3945 Lakefield Court  
Suwanee, GA 30024  
(770) 866-3200 FAX (770) 866-3259



**MAS Project M71614**  
**Talcum Powder Analysis**  
**Valadez- J & J Baby Powder Container**



Prepared for: The Law Firm of Kazan, McClain, Satterley & Greenwood

Prepared By: William E. Longo, Ph.D., CEO

Materials Analytical Services, LLC

**02/28/2023**

TABLE OF CONTENTS

PROJECT SUMMARY.....	3
OVERVIEW.....	3
MATERIALS & METHODS.....	4
RESULTS .....	8
DISCUSSION/CONCLUSION.....	10



## PROJECT SUMMARY

This report provides the results for the analysis of the Johnson & Johnson Baby Powder (JBP) container submitted to MAS by Joe Satterley on behalf of the Kazan, McClain, Satterley & Greenwood law firm. The JBP container was sent to MAS on 1/25/23 where it was received and logged in on 1/26/23 and then placed in a secure laminar flow hood. The JBP sample container was assigned the following MAS laboratory tracking number of M71614-001.

Table 1 provides a sample description summary of the JBP that was analyzed for asbestos.

**Table 1**  
**JBP Sample Container Descriptions**

MAS Sample No.	Product	Container size (oz)	Container Code	Condition of Container	Source of Sample
M71614-001	2018 Johnson's Baby Powder	1.5	11219RA	Sealed	Submitted by Joe Satterley

## OVERVIEW

This report provides the analytical results for the testing of one JBP container that MAS analyzed as requested by the law firm of Kazan, McClain, Satterley & Greenwood. According to the chain of custody information, the JBP container was purchased from a market gift shop at the Court Yard Marriott located in Merced, California. The container was sealed as shown in the photographs located in Section 5 of this report.

The talcum powder in the JBP sample container was analyzed for both chrysotile and amphibole asbestos using PLM and ATEM.

For the chrysotile analysis, the sample was first prepared by the Colorado School of Mines (CSM) sample preparation method (with HLS), then the prepared sample was analyzed by PLM using a refractive index fluid 1.560.

For the detection of amphibole asbestos for the JBP container, both PLM and ATEM analysis methods was done. For PLM analysis, the sample was prepared (with HLS) by the New York ELAP method. The PLM analysis used method ISO 22262-1 with refractive index fluid 1.605. The ATEM sample preparation was analyzed using the standard TEM methods.

## Overview of Results

### The CSM Sample Preparation (with HLS) & Analyzed by the ISO 22262-1 Method

The amount of chrysotile found in the JBP sample had an average estimated volume weight concentration of 0.0003 to 0.006% (recovery weight corrected). The average amount of chrysotile bundles was 56,000 bundles per gram of talc (recovery weight corrected).

### The NYELAP (with HLS) Method for Amphibole Asbestos

The analysis showed that the JBP sample was non-detect for amphibole asbestos.

### ISO 22262-1&2 ATEM HLS Method for Amphibole Asbestos

The JBP sample was found to be non-detect, with a detection limit of <52,000 structures per gram.

## MATERIALS & METHODS

### JBP Sample Container

After the JBP sample container was logged in at MAS, the container was transferred to the cosmetic talc archive room where it was photographed in the received condition and inspected for damage or tampering. The MAS chain-of-custody documents can be found in Section 2 of this report, and photographs the container can be found in Section 5 of this report.

### Muffle Furnace

For this procedure, approximately 1 to 2 grams from the talcum powder sample was removed from its container (Sartorius Research Balance) and placed in a glass scintillation vial. The scintillation vial was then placed in a Fisher Scientific Iso-temp muffle furnace Model #620 at 480°C for a minimum of 12 hours to remove any organic material. Typically, the muffle furnace sample is run overnight.

### CSM Sample Preparation Method (with HLS) and ISO PLM Analysis (Chrysotile Asbestos)

#### **CSM Sample Preparation**

Approximately 200 milligrams from the muffled talcum powder sample were transferred into a 15 ml centrifuge tube (VWR 10026-076). Through the use of DI water, approximately 5 ml of adjusted HL (Lithium heteropolytungstates solution, GeoLiquids, Inc., Cat. No. LST010 (stated density of 2.85 g/cc), was diluted to a new density of 2.65 g/cc, as determined by a VWR Hydrometer, Model Number 34620-1109.

The newly diluted HL was added to the VWR centrifugation tube containing the talcum powder sample and then shaken vigorously for 10 to 20 seconds. The VWR centrifugation tube was then placed in an Ohaus Frontier 5000 series centrifuge set at 2000 RPM for 92 hours at room temperature without breaking. After removing the tube from the centrifuge, the talc/heavy liquid

(light fraction) was pipetted off the top of the centrifuge tube, then mixed with DI water and filtered onto a new 0.45um 47mm PC filter and allowed to dry under a drying lamp for 20 to 30 minutes. This washing step was repeated two more times for the sample.

After drying, the final MCE filter/talc sample (light fraction) was provided to the PLM analyst. The 47 mm MCE filter was weighed before HLS recovery process, then after the filtration and drying of the heavy fraction.<sup>1,2</sup>

#### **PLM – New York ELAP Method (with HLS Sample Preparation) for Amphibole Asbestos**

Approximately 200 milligrams from the muffled talcum powder sample were transferred into a 15 ml centrifuge tube (VWR 10026-076). Through the use of DI water, approximately 5 ml of adjusted HL (Lithium heteropolytungstates solution, GeoLiquids, Inc., Cat. No. LST010 (stated density of 2.85 g/cc), was diluted to a new density of 2.78 g/cc, as determined by a VWR Hydrometer, Model Number 34620-1109.<sup>3</sup>

The newly diluted HL was added to the VWR centrifugation tube containing the talcum powder sample and then shaken vigorously for 10 to 20 seconds. The VWR centrifugation tube was then placed in an Ohaus Frontier 5000 series centrifuge set at 2000 RPM for 92 hours at room temperature without breaking. After removing the tube from the centrifuge, the talc/heavy liquid (light fraction) was pipetted off the top of the centrifuge tube. The pellet along with the DI water was then filtered onto a new 0.45um 47mm PC filter and allowed to dry under a drying lamp for 20 to 30 minutes. This washing step was repeated two more times for the sample.

After drying, the final MCE filter/talc sample (heavy fraction or pellet) was provided to the PLM analyst. The 47 mm MCE filter was weighed before HLS recovery process, then after the filtration and drying of the heavy fraction.

#### **ISO 22262-1 PLM Analysis of the Samples Prepared by the CSM & New York ELAP Method**

Approximately 100 milligrams from the muffled talcum powder sample (heavy fraction) were analyzed by the ISO 22262-1 PLM method. To determine the actual amount of talcum powder analyzed by this method, the sample was prepared as follows: two new glass slides that are used to analyze the talcum powder sample by PLM for this project were separately weighed and recorded (Sartorius Research Balance). Next, three talcum powder sample mounts were placed on the two glass slides (one talcum powder mount on one slide and two talcum powder mounts on the second slide). While each sample mount was transferred onto the glass slides, each of the glass slides were reweighed and recorded. Afterwards, a drop of either 1.560 (CSM) or 1.605 (NY) refractive index fluid was placed on each sample mount and stirred with the point of a scalpel blade. The three sample mounts were then covered with an 18 x 18 mm glass cover slip.

---

<sup>1</sup> Colorado School of Mines Research Institute February 26, 1973 Report Re: Mineralogical Examination of Five Talc Samples to W.H. Ashton from W.P. Reid and W.T. Caneer.

<sup>2</sup> Colorado School of Mines Research Institute April 2, 1973 Report re: Mineralogical Examination of four Samples for Tremolite and Chrysotile from W.P. Reid to W.H. Ashton.

<sup>3</sup> NY Environmental Laboratory Approval Program Certification Manual, ELAP Method 198.8

Each sample was then examined under elongation PLM conditions, cross polars with the 530 nm analyzer plate inserted. 30 total fields per field of view (a single PLM field of view has an area of  $0.785 \text{ mm}^2$ ) are examined (10 fields of view for each of the three mounts) for a total area examined of  $23.55 \text{ mm}^2$ .

Positive identification of chrysotile asbestos bundles was done by morphology, refractive indices, elongation, extinction angle, birefringence and pleochroism as described by the ISO 22262-1 PLM method. The ISO PLM analysis protocol was used to show how the analysis is done. However, the range of acceptable RIs for the NIST 1866b chrysotile were not used. The reason for this will be discussed later in this report.

If chrysotile is present, the PLM analyst will count the number of positively identified chrysotile structures in each field of view based on the above criteria and record that number on the MAS PLM data sheet.

In addition, up to three or four representative chrysotile bundles are photographed in both the parallel and perpendicular direction under dispersion staining, elongation, cross polars and with polarizers out. The detection limit for this method, as specified by the ISO 22262-1 method, is the finding of either 1 fiber or 1 bundle in the analysis.

As described above, amphibole asbestos was also analyzed by the ISO 22262-1 PLM method. In addition to the determination of whether regulated amphibole asbestos structures are present in the sample, the sample was also examined for possible amphibole cleavage fragments in 1.605 RI fluid. The detection limit for this method, as specified by the ISO 22262-1 method, is the finding of either 1 fiber or 1 bundle in the analysis.

#### **ATEM Sample Preparation: Amphibole Asbestos ISO 22262-2 (with HLS Sample Preparation)**

The HLS sample preparation for the ATEM analysis was done by the ISO 22262-1 & 2 methodology. Approximately 25 to 30 milligrams (Sartorius Research Balance) from the muffled furnace talcum powder sample were placed into a labeled 15 ml centrifuge tubes (VWR 10026-076).

Approximately 5 ml of heavy liquid (Lithium heteropolytungstates solution, GeoLiquids, Inc., Cat. No. LST010 (stated density  $2.85 \text{ g/cc}$ ) was added into the centrifuge tube containing the talcum powder sample, that was then prepared and shaken vigorously by hand for 10 to 20 seconds.

The centrifuge tube was placed in an Eppendorf micro-centrifuge (Model No. 2412D) set at 2000 RPM for 24 hours at room temperature. After removing the tube from the centrifuge, the talc/heavy liquid (light fraction) was pipetted off the top of the centrifuge tube.

Deionized water was added to the centrifuge tube to bring the volume to approximately 15 ml. The 15 ml centrifuge tube was then capped and inverted by hand 2 times to distribute the collected material in the bottom of the tube tip. Next, the 15 ml mixture was immediately and continuously

filtered through a separate 47 mm Polycarbonate filter (PC) with a 0.22µm pore size. After the mixture was filtered, the excess heavy liquid was washed through the filter with the addition of approximately 100 ml of deionized water. The prepared PC filter was placed in a new disposable plastic 47 mm petri dish and allowed to dry at ambient room temperature in a HEPA hood for a minimum of 2 hours. The processed PC filter sample was directly prepared onto 100 µm TEM size grids (2 for analysis and 1 for archive) using the standard TEM filter preparation protocol for PC filters.<sup>4, 5, 6</sup>

#### **ATEM Amphibole Asbestos Analysis: ISO 22262-1 & 2**

For the ATEM analysis, 100 grid openings were analyzed between two grids (50 openings per grid). JEOL 1200EX ATEMs equipped with either a Noran or an Advanced Analysis Technologies (light element) energy dispersive x-ray analyzer (EDXA) were employed for this analysis.

The sample was analyzed at a screen magnification of 20,000X. Verification of regulated amphibole asbestos structures is done in the ATEM by the following three steps:

##### **Morphology (Step 1)**

The determination of the fibrous morphology for any potential regulated amphibole asbestos structures in the TEM sample was done by the standard ATEM methodology.<sup>3,5</sup> Morphology is identified when the fibers and bundles of potential asbestos structures have substantially parallel sides with an aspect ratio of 5:1 or greater, and at least 0.5 µm in length.

##### **Regulated Amphibole Asbestos Verification (Steps 2 & 3)**

Potential fibrous amphibole asbestos structures that fit the above morphology criteria are analyzed in the ATEM by EDXA for the fiber/bundle chemistry (Step 2) and selected area electron diffraction (SAED), for the appropriate crystalline lattice measurements for amphibole asbestos (Step 3) as described in the ISO 22262-1 & 2 methods.

The detection limit for this method, as specified by the ISO 22262-1 method, is the finding of either 1 fiber or 1 bundle in the analysis.

##### **Process Laboratory Blank**

The process laboratory blank (M71614-000) was run concurrently with the corresponding JBP sample preparations by the ATEM HLS method (amphibole asbestos). The process blank PC filter was prepared in the same exact manner as the ATEM talcum powder sample (with heavy liquid, filtration on PC filters, etc.) but without any talcum powder. For the ATEM analysis, 100 grid openings (two grids, 50 grid openings each) were analyzed for the process blank.

---

<sup>4</sup> D5755-09 "Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Loading.

<sup>5</sup> D5756-02 "Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust Loading by Transmission Electron Microscopy for Asbestos Mass Surface.

<sup>6</sup> U.S. Environmental Protection Agency (USEPA) 1987. Asbestos Hazard Emergency Response Act, 40 CFR Part 763, Appendix A to Subpart E, USEPA, Washington D.C.

## RESULTS

### **CSM Sample Prep. (HLS)/ISO 22262-1 PLM Analysis Chrysotile Asbestos)**

The amount of chrysotile found in the JBP sample had an average estimated volume weight concentration of 0.0003 to 0.0006% (recovery weight corrected). The average amount of chrysotile bundles was 56,000 bundles per gram of talc (recovery weight corrected).

The average birefringence (BIR) of the chrysotile bundles was calculated from the refractive index measurements and found to have a BIR classification of 0.006 which is classified as a Low birefringence (<0.01).

The CSM/ISO-PLM data sheets can be found in Section 3 of this report.

### **PLM – New York ELAP Method Sample Prep. (HLS)/ ISO-22262-1 PLM Analysis for Amphibole Asbestos**

The analysis showed the JBP sample was non-detect for amphibole asbestos.

The ISONY-PLM data sheet can be found in Section 3 of this report.

### **ATEM ISO 22262-1 & 2 Amphibole Asbestos Method**

The ISO 22262-2 ATEM heavy liquid separation method showed that the JBP sample reported a detection limit of approximately <52,000 structures/bundles per gram.

The ATEM data sheets can be found in Section 3 of this report. The summary of the ATEM results are shown in Table 2.

### **ATEM Process Blanks**

The analyzed ATEM process blank sample showed no asbestos structures, cleavage fragments or fibrous/platy talc detected. The ATEM data sheets can be found in Section 4 of this report. The summary of the overall analytical results is shown in Table 2.

**Table 2**  
**Overall Summary of the JBP Asbestos Sample Analysis Results**

MAS Sample #	ATEM Amphibole Asbestos	ISO-NY PLM Wt. % Amphibole Asbestos	CSM-PLM w/o HLS Chrys %	CSM Weight Recovery Light fraction	CSM Chrys % Weight Corrected**
M71614-001	<52,000	NSD	0.002-0.004	15.8%	0.0003-0.0006

\*NSD: No Structure Detected \*\*Weight Corrected

The refractive index and calculated birefringence values are shown in Table 3.

**Table 3**  
**Overall Summary of the Calculated Chrysotile**  
**BIR CSM-PLM Data**  
**(RI Fluid 1.650)**

MAS Sample #	Chrysotile RI Values CSM-PLM	Birefringence Calculations
M71614-001	1.568-1.564 1.564-1.557	0.004-0.007 avg. = 0.006
	$\alpha$ range $\gamma$ 1.564-1.557 1.568-1.564	Avg. = 0.006

**Estimation of the Number of Chrysotile Bundles Detected for CSM PLM Methods**

Using the number of chrysotile bundles counted during the PLM analysis, and the amount of talcum powder analyzed in a specified area on the cover slip mount per the two glass slides, the amount of chrysotile bundles per gram of talcum powder sample can be calculated.

Total chrysotile bundles in the sample is calculated as shown in the following equation:

$$(A1 \div A2) \times (CB) \div W = TCB/W$$

**Where:**

**A1:** The total area (972 mm<sup>2</sup>) that the talcum powder occupies on the two glass slides.

**A2:** The area (23.55 mm<sup>2</sup>) in thirty fields of view that the talcum powder occupies on the two glass slides.

**CB:** Number of chrysotile bundles detected in a positive sample by PLM analysis.

**W:** Weight of total talcum powder placed on the two glass slides.

**TCB/W:** Total number of chrysotile bundles per weight (grams) of talcum powder.

The results of CSM sample preparation analysis calculations are shown in Table 4.

**Table 4**  
**Summary of Estimated Chrysotile Bundles per gram Calculations**  
**For the CSM PLM Results**

MAS Sample #	wt. of sample grams	No. of Chrys Bundles counted	CSM/ISO Chrysotile Bundles/g	CSM/ISO* Chrysotile Bundles/g
M71614-001	0.0007	6	354,000	56,000*
			Avg. = 354,000	Avg. = 56,000*

Weight corrected\*



The average of the amount of chrysotile bundles for the CSM sample preparation methods for the JBP sample was 56,000 bundles per gram of talc.

## DISCUSSION/CONCLUSION

### Colorado School of Mines (w HLS) Sample Preparation of Cosmetic Talc

This section reviews the development of the double density cosmetic talc sample preparation, by the Colorado School of Mines Institute, on behalf of J&J for the concentration of chrysotile and amphibole asbestos.

The sample preparation part of the MAS chrysotile analysis is based on the work done by the CSM in the early 1970's for the detection specifically for possible chrysotile and amphibole asbestos in J&J sourced Vermont talcum powder, from the Frostbite mine using, double heavy liquid separation (<2.9 g/cc & >2.9 g/cc).

An overview of this method development by CSM is as follows:

**In a January 17, 1973 Windsor Minerals document** sent by R.N. Miller to Mr. Bill Ashton of J&J, subject: "Core samples, diamond drill holes, **Frostbite mine**" informing Bill Ashton that Windsor Minerals was sending 1/8 split of our retain samples from the cosmetic ore sampling done in these holes. The memo goes on to say, "This is the material which was sent to Colorado identified as CN core which we conducted our pilot production runs which yielded Grade 66 material. (JNJ000682638)<sup>7</sup>

Cosmetic Talc Core Samples mailed to Colorado School of Mines:

#### Hole Numbers

1. 30-71-S      4. 32-71-S
2. 30-B-71-S    5. 34-71-S
3. 30-C-71-S

**February 26, 1973 Colorado School of Mines (CSM) document for, Project no. C10704, reported their analysis W.H. Ashton**, where these same five Frostbite core samples were prepared with heavy liquid separation (HLS) with two different densities (<2.9 & >2.9) and with acid leaching. (JNJNL61\_000008084 thru JNJNL61\_000008089). The "as received samples" and were first analyzed using x-ray diffraction and microscopic studies without HLS.

---

<sup>7</sup> January 17, 1973 Windsor Minerals document sent by R.N. Miller to Mr. Bill Ashton of J&J, subject: "Core samples, diamond drill holes, Frostbite mine".



The results stated that “Relative to possible asbestos type minerals, samples **30-71-S** and **30-B-71-S** contained slight traces of tremolite-actinolite minerals. Sample **32-71-S** is suspected to contain a very minor amount of serpentine which maybe chrysotile”.

As further outlined in the **2/26/1973 Report**, the next phase of study was that the 5 Frostbite talc ore samples were first fractionated using heavy liquid separation (HLS) and then with acid dissolution, then analyzed by XRD. The report describes the HLS method as follows: Each of the ground talc ore was separated into fractions by centrifugation in heavy liquids: specific gravity <2.90 and specific gravity >2.90. After the x-ray diffraction of the >2.90 specific gravity fractions, the sample was leached with 1:1 HCL to remove magnesite. The insoluble residue was then examined for amphiboles with a petrographic microscope. In both Phase 1 and Phase 2, possible serpentine was detected in Frostbite ground talc ore sample 32-71-S.

The last phase of this analysis, CSM attempted to verify the presence of serpentine in sample 32-71-S <2.65 fraction by step scan x-ray diffraction over the critical diffraction peaks of serpentine which is in the 7Å and 14Å region, **“the initial result suggested that serpentine, not chlorite, was present.”**

Microscopic examination of the <2.65 fraction identified a “very minor (1%) amounts of possible serpentine fibers” that was facilitated by staining with 1% iodine in glycerin.

**The report recommended that further work be done on this sample (32-71-S).** It has been suggested in the past by defense attorneys that this statement meant that more work was needed on the heavy liquid separation sample preparation method. That suggestion is not true.

**April 2, 1973 Colorado School of Mines (CSM) document for Project no. C10704, reported their analysis to W.H. Ashton**, where the primary objective of the studies was to determine the presence or absence of tremolite and chrysotile in talc bearing head samples labeled 1 through 4.

For the HLS sample preparation and analysis, by CSM, the four head talc ore samples were first ground into two size ranges of minus 200 plus 325 and minus 325. The samples were then prepared with CSM’s double heavy liquid separation method and acid dissolution, analyzed by XRD and or optical microscopy. For optical microscopy of tremolite analysis, RI fluid 1.600 was used for their PLM analysis of the tremolite asbestos. MAS has been criticized in the past for using 1.605 RI fluid because it was not high enough as suggested by J&J’s experts, even though the CSM used 1.600 used a lower RI fluid.

#### **Results:**

##### **Chrysotile (HLS <2.65 g/cc)**

- 1) **Minus 200 plus 325 mesh:** Chrysotile abundance was estimated as <0.0001% in sample 3 and <0.0006% for sample 4.

- 2) **Plus 325 mesh:** Chrysotile abundance was estimated as <0.0007% in samples 2, 3 and <0.0006% for sample 4.

**Tremolite (HLS >2.90 g/cc)**

- 1) Minus 200 plus 325 mesh: possible tremolite was found in sample 2 is estimated at <0.002%
- 2) **Minus 325 mesh:** No tremolite was detected in any of the four samples.

These four samples were labeled “head” samples which defined as average grade feed that goes into the mill before the flotation process. There was no identification of the source of the talc samples in the April 2, 1973 Colorado School of Mines Report. However, it is most likely these head samples were collected in the same area that sample 32-71-S was collected from the Frostbite mine. The reason for this is that in the Colorado School of Mines 2/26/1973 report to Dr. Ashton, the very last sentence in the report states “that further work be done on this sample 32-71-S”.

It would seem logical that the next set of talc samples analyzed was fulfilling that further work statement about Frostbit sample 32-71-S. Also, there were only 36 days between the CSM February and April reports, and all three of these reports have the same CSM Project no. C10704.

**December 27, 1973:** Colorado School of Mines Research Institute prepared the following report for Johnson & Johnson, “A Procedure to Examine Talc for the Presence of Chrysotile and Tremolite-Actinolite Fibers. Project C10704. (JNJ 000268037 to 045).<sup>8</sup>

This CSM report provides the methodology using double density heavy liquid separation for chrysotile and amphibole asbestos. It reports a detection limit of 10 ppm (0.00001%) and verification of asbestos types, after separation, was done by optical microscopy.

This method also stated the following: “Electron Microscopy examination employing selected area electron diffraction and/or x-ray emission spectrography may be required in order to specifically identify small fibrous particulates”. The Colorado School of Mines recognized that TEM would be needed to identify for small particles.

Nowhere in this report was there even a suggestion by the Colorado School of Mines that their double density heavy liquid method, for sample preparation, for both chrysotile and amphibole asbestos, was anything but a sound scientific method.

---

<sup>8</sup> December 27, 1973, Colorado School of Mines protocol entitled “A procedure to Examine Talc for the Presence of Chrysotile and Tremolite-Actinolite Fibers” Herman Ponder Director, Jerry Krause Senior Scientist and James Link Director Mining Division.

In fact, this sample preparation was approved and signed off by the following individuals from the Colorado School of Mines Research Institute: Herman Ponder, Director, James M. Link, Director Mining Division, and Jerry Krause, Senior Scientist Mining Division.

In the Introduction Section, the second paragraph states the Following;

*"As the impurity level becomes very low ( $<<1\%$ ), it is necessary to examine increasing amounts of sample in order to detect the impurity. **As a result of the requirement to detect the proverbial "needle in a haystack,"** we have evolved a procedure which preconcentrates the impurities prior to examination. The net effect is that a large initial sample is fractioned in order to reject the majority from further examination.*

This was the same reason that MAS decided to use heavy liquid separation in late 2016 for cosmetic talc analysis as described above by the Colorado School of Mines.

#### Johns-Manville

Another indication of how confident the Colorado School of Mines was in their double density separation method, they informed Johns-Manville that the thought this heavy liquid separation method they developed, was good enough to be considered for a patent (JNJMX68\_000007044 to 000007046).

In an October 29, 1973 letter from V.E Wolkodoff of Johns-Manville to Mr. Caneer, Colorado School of Mines, in response to a phone call from Mr. Caneer, Mr. Wolkodoff writes the following:

*"Specifically, we were interested in your advanced technology used to separate felted masses of asbestos by heavy liquid separation" preparatory to staining of chrysotile by iodine as worked out by Morton and Baker of Johns-Manville".*

Mr. Wolkodoff further writes, *"I understand your position completely on specific techniques being worked for other companies which are proprietary and, as you had indicated, will probably be patented."*

This letter confirms CSM was both developing this sample preparation method for J&J, and thought it was such an advancement in talc sample preparation technology for PLM analysis, they were considering to protect it with a patent.<sup>9</sup>

With that said, there no indication or documents that J&J's CSM double density talcum powder sample preparation method was ever patented, or shared with the FDA when they struggled with

---

<sup>9</sup> October 29, 1973 letter from V.E Wolkodoff of Johns-Manville to Mr. Caneer, Colorado School of Mines.

their own development of a concentration method, or over a period of 50 to 60 years, there is no evidence that J&J ever had their main outside QA labs (McCrone or the R.J. Lee Group) use the much superior CSM sample preparation method, when they were analyzing J&J's talcum powder by XRD, PLM and or TEM for asbestos. The lack of use of the CSM sample preparation method by these two outside labs, explains why hundreds, if not thousands of J&J's talc sample analysis for asbestos analysis were found to be non-detects by the McCrone and RJ Lee labs.

I believe the reason that the CSM talc sample concentration preparation method for chrysotile and amphibole asbestos, was never used by J&J, can be summed up by the following statements by Dr. Robert Rolle of J&J in two documents. The first document is a May 22, 1973 Report entitled "Proposed Specs for Analyzing Talc for Asbestos". On the third page concerning Dr. Pooley's preconcentration method for tremolite, Dr. Rolle states, "This technique has not been written up yet, but evidently when applied to Vermont talc, 0.5% of the tremolite-type is found." Dr. Nashed of J&J received this report on May 23, 1973 (JNJAZ56\_000001892 to 1989)<sup>10</sup>

***"The limitation of this method is that it may be too sensitive."***

The second document is a February 18<sup>th</sup>, 1975 memo to Dr. Rolle where he states, "I have also enclosed our test method for the proposed Xray technique which was drawn up by Boots Ltd in conjunction with Dr. Pooley" (JNJNL61\_0000062953)<sup>11</sup>

***"We deliberately have not included a concentration technique as we felt it would not be in worldwide company interest to do this."***

### **Physical Prosperities of Tremolite & Anthophyllite**

In the December 27, 1973 Colorado School of Mines Research report, it is interesting that tremolite was detected in the plus 200 minus 325 samples, but not in the minus 325. These findings are consistent with the Pang et al. publication in 1987.<sup>12</sup> For this study, they spiked talc with tremolite (1 and 0.1%) and ground these samples for two size ranges; 1) 50% was minus 325 and 2) 100% minus 325.

The results showed that for the TEM analysis (100 grid openings) the 1% spiked tremolite sample, at 50% minus 325, the number of tremolite fibers detected was 1,592, and for the 100% minus 325, the number of tremolite fibers was reduced to 91 structures or 5% detected.

---

<sup>10</sup> May 22, 1973 Report where the Subject, entitled "Proposed Specs for Analyzing Talc For Asbestos".

<sup>11</sup> February 18<sup>th</sup>, 1975 memo to Dr. Rolle.

<sup>12</sup> Thomas W.S. Pang, et al., "Determination of tremolite Asbestos in Talc Powder Samples" Ann. Occup. Hyg., Vol. 31, No. 2, pp 219-225, 1987.

For the 0.1 wt. percent, for the TEM analysis (100 grid openings) the 0.1 % tremolite spiked sample at 50% minus 325, the number of tremolite fibers detected was 88 and for the 100% minus 325, the number of tremolite fibers was reduced to 0 structures detected.

What is important about this study, is first that the tremolite used was characterized by the authors as tremolite asbestos/asbestiform due to the aspect ratio. Second, the asbestos fibers/talc spiked samples were ground so that there were two different particle size populations for two sample sets, 1<sup>st</sup> set, 50% of the sample would pass through a 325 mesh per inch sieve (45 µm opening), 2<sup>nd</sup> set, 100% of the sample would pass through the 325 mesh.

The Pang publication showed that when the talc was ground to the point that the size of the talc particles was small enough that 100% of the powder went through a 325 mesh it either greatly reduced (1.0% spiked sample) or eliminated (0.1%) is consistent with what Colorado School of Mines reported to J&J in their April 2, 1973 Protocol.

The reason for the tremolite asbestos being ground up is due the physical properties of tremolite asbestos, as well as anthophyllite asbestos, where both tremolite and anthophyllite have both low tensile strengths causing (brittle), and not flexible like chrysotile, and to a lesser degree, amosite and crocidolite.<sup>13</sup> Since tremolite asbestos is brittle, the grinding to a minus 325 mesh size, by both the CSM and the Pang research, simply broke the tremolite fibers/bundles into non-fibrous particles.

The CSM results also showed that chrysotile was not affected when ground to a minus 325 mesh size because chrysotile has high tensile strength, good flexibility and is the reason that most all asbestos-containing cloth is woven out of chrysotile and not ever from tremolite or anthophyllite asbestos.

This discussion goes to the whole issue of the general geological definition of “asbestiform” that appears in many of the standard TEM protocols, including the ASTM D5755-09 dust method that I was the primary author of the ASTM D5755-09 protocol.<sup>14</sup> This general definition is as follows:

*“asbestiform-a special type of fibrous habit in which the fibers are separable into thinner fibers and ultimately into fibrils. This habit accounts for greater flexibility and higher tensile strength than other habits of the same mineral.”*

This is only a general definition that a geologist might be interested in when evaluating a potential asbestos mine, since the more fibrous the asbestos deposit, the more economical value the mine would have.<sup>13</sup> The economic value which depends on the grading of the asbestos where the most

---

<sup>13</sup> M.A. Vos, Asbestos in Ontario, Industrial Mineral Report, Ontario Department of Mines and Northern Affairs, Ontario, Canada 1971.

<sup>14</sup> ASTM D5755-09 Dust Method

important factors are fiber or fiber length, tensile strength, flexibility, and spinnability among others, as shown in the Table 5.

**Table 5**  
**Physical Properties of Asbestos**  
**M.A. Vos, Asbestos in Ontario**

<b>Asbestos Type</b>	<b>Tensile strength (PSI)</b>	<b>Flexibility</b>	<b>Spinnability</b>
Chrysotile	80,000-100,000	High	Very Good
Amosite	16,000 - 90,000	Good	Good
Crocidolite	100,000-300,000	Good	Good
Tremolite solid solution series	<1,000 - 8,000	Poor	Poor
Anthophyllite	4,000 or less	Poor	Poor

As the above table shows, the physical properties of tremolite, and anthophyllite asbestos have low tensile strength, both poor flexibility and spinnability, as compared to the other three asbestos types found in asbestos added products, and yet are regulated asbestos.

In a recent publication by Germine & Puffer entitled “Anthophyllite Asbestos from Staten Island, New York: Longitudinal Fiber Splitting”, concluded that the low quality characteristics of anthophyllite asbestos from the Staten Island mine, are consistent with the anthophyllite asbestos of the Finland mine.<sup>15</sup> These characteristics include low aspect ratios, longitudinal splitting rather than crystal growth and “rather brittle such that they could not be woven in the manner of high quality chrysotile.” Besides another research group verifying that anthophyllite asbestos is brittle causing low tensile strength, not flexible or separated into single fibrils, would not meet the disputed general geological asbestiform definition for commercial asbestos added products, but they also state in the last sentence of their paper “anthophyllite and amosite fibers are not asbestiform like chrysotile fibers but are never less potentially dangerous.”

If this asbestiform definition was meant to be more than a general geological one, then the various analytical methods, using this definition, would have incorporated into the analytical methods, how to measure the tensile strength or flexibility of the microscopic asbestos fibers and bundles. Of course, the methods do not provide a means to measure flexibility and tensile strength since that type of measurement is impossible to accomplish by either PLM or TEM. Also, none of these

---

<sup>15</sup> Mark Germine and John H. Puffer, “Anthophyllite asbestos from Staten Island, New York: Longitudinal fiber Splitting”, Archives of Environmental & Occupational Health, (2021) <https://doi.org/10.1080/19338244.2021.1873095>

analytical methods define what high tensile strength is, or how many measurements constitute a population.

### **Other Asbestos Concentration Methods for Cosmetic Talc**

#### **Yardley LTD. Method**

A J&J produced document (JNJ00026450 to 4509 **redacted**) that also has a Bate stamp number DX8011.0010 to .0010 **un-redacted**) entitled "A Method for the Separation of Impurities from Talc", is a double density separation sample preparation method that is very similar to the CSM double density sample preparation method.<sup>16</sup> The primary differences involves the density for the heavy liquid that was used. Where the CSM method uses 2.65 g/cc for the chrysotile and >2.90 g/cc for the amphibole asbestos, the Yardley method uses 2.69 g/cc for chrysotile and 2.83 g/cc for amphibole asbestos. Also, the Yardley method uses a centrifuge speed of 3,000 rpm for 5 minutes, the CSM method uses a centrifuge speed of 800 rpm for two intervals of 30 minutes. The 1991 published Blount HLS sample preparation method for amphibole asbestos, uses 2.81 g/cc and a centrifuge speed of 7,000 rpm for 10 minutes.

Each of these heavy liquid separation methods are using slightly different HL density liquids and different centrifuge speeds and times. The main point of this is that scientists are using different HL densities and centrifugation times that work best for them. There is no right or wrong, the only thing important is that heavy liquid separation of asbestos from talcum powder is a well-researched method developed by J&J almost 50 years ago, published by Dr. Blount in 1990/91, and is also an International Standards Organization protocol (ISO 22262-1 &2) method.

I will also be relying on the 21 J&J produced documents for asbestos concentration methods in talc, that was produced in total to J&J (Exhibit 3) to my 9/28/18 deposition in the Hayes case.<sup>17</sup>

#### **MAS' PLM Analysis of Chrysotile in Cosmetic Talc**

The PLM analysis performed by MAS, showed that the JBP container that was analyzed by the CSM sample preparation method with HLS was positive for chrysotile asbestos.

MAS' PLM analysis was able to both detect and determine the amount of chrysotile bundles in the sample with HLS because MAS uses PLM microscopes that has higher resolution and analytical

---

<sup>16</sup> A Method for the Separation of Impurities from Talc

<sup>17</sup> Index for 21 J&J produced asbestos concentration documents in W. Longo 9/28/2018 Dona Hayes deposition (Exhibit 3).



sensitivity capabilities, than your standard PLM microscope which is more suited for analyzing asbestos added products (AAP).

In AAP (chrysotile) samples as compared to cosmetic talc samples, has a much higher population of very large size chrysotile bundles and orders of magnitude higher concentration levels of chrysotile in these types of products.

The PLM analysis of AAP samples does not challenge the resolution of the typical PLM microscope optics, or burden the microscopist with very long sample analysis times. For example, in most PLM labs, including MAS's, the typical time required for an experienced PLM microscopist to analyze asbestos added products (AAP), where the majority of the AAP samples contain approximately 10 to 25 % asbestos, will only take about 15 and 20 minutes to complete the analysis.

With a cosmetic talc sample on the other hand, a typical PLM analysis at MAS, for either chrysotile or amphiboles asbestos, would routinely take 2 to 4 hours for a positive sample and a minimum of 20 minutes to hour for a negative sample, if there are no pigments in the sample. In order to both detect and analyze the small size of the chrysotile bundles (10 to 20  $\mu\text{m}$  in length), that are typically found in cosmetic grade talcum powder, through the use of dispersion staining, the PLM microscope must have "flat" objective lenses, and a HD video camera attached to the PLM microscope that is interfaced to a high definition monitor.

The MAS PLM microscopes are state-of-the-art Leica DM2700P PLM microscopes, where all of the objective lens, including the 10X central stop dispersion lens are the flat type, also known as infinity lens, LED light source, and are coupled with state-of-the-art HD digital camera and 37" HD monitor. To detect these size chrysotile bundles, it is highly recommended that this type of PLM microscope setup should be used for the PLM analysis of cosmetic talc samples.

It is also my opinion that the PLM analysis must first analyze prepared talcum powder standards, containing UCC SG-210 or RG-144 Calidria chrysotile, to become familiar with both the size of chrysotile structures found in cosmetic talc, as well as the difference in the refractive indices for the chrysotile as compared chrysotile added products.

Both the RG-144 and RG-210 Calidria chrysotile and the chrysotile found in the talcum powder samples typically shows central stop dispersion colors (CSDS) from blues ( $\alpha$ ) to golden yellows ( $\gamma$ ) in 1.550 liquid, and blue to a dark gold in 1.560 liquid. MAS has been reporting this range of CSDS colors for the chrysotile detected in the cosmetic talc samples for almost two years using 1.550 RI liquid. During that time, defendant experts, retained by a number of cosmetic talc manufactures,



and have repeatedly testified that MAS' CSDS findings are not appropriate for chrysotile. Therefore, in their opinions, MAS was and has been misidentifying fibrous/platy talc edge or cellulose as chrysotile.

For this set of samples, MAS used higher RI fluid (1.560) as discussed by Dr. Gunter, Alan Segrave (defense experts) in their expert reports, and Dr. Su's photo-shop expert report, where they stated that to verify that MAS is identifying chrysotile, we need to use a higher RI fluid than 1.550. For this PLM analysis of JBP sample, instead of using 1.550 RI fluid, MAS used 1.560 RI fluid to further verify the chrysotile findings in the cosmetic talc. The results showed that the primary difference between the two RI liquids is that the measured refractive indices for the 1.560 RI Fluid were closer together for the alpha and gamma directions, which caused the BIR calculations to be all in LOW range with an overall average of 0.007 (See Table 3), versus 0.010 to 0.013 range typically seen using 1.550 RI fluid.

Additionally, Dr. Gunter, while working as a defense expert for Gold Bond defense council, analyzed samples of RG-144 and SG-210 Calidria chrysotile, that MAS provided to him, and confirmed in a recent deposition that "Calidria chrysotile can produce a range of CDSC colors from bluish to golden-yellow in 1.550 liquid."<sup>18</sup> Dr. Gunter's Calidria chrysotile results are consistent with our laboratories findings, which validates our PLM chrysotile findings in the cosmetic talc samples. Dr. Gunter's testimony about his Calidria CSDS results is in direct contradiction to his original criticism of the "yellow" dispersion color, as well as Dr. Sanchez and Mr. Seagrave's past testimony on this issue.

It is my opinion, that when these defense experts were testifying that our Laboratory was misidentifying fibrous talc or talc plates on edge for chrysotile based on the CSDS "yellow color", as it turns out, the opposite was true, they were the ones misidentifying chrysotile as fibrous talc or talc plates on edge.

#### **ISO-PLM Chrysotile Refractive Index Ranges**

As shown in Table 3, the range of measured refractive indexes for the detected chrysotile bundles in the JBP sample was 1.564-1.568 (parallel) and 1.557 to 1.564 (perpendicular) for the average CSM method.

Shown in Table 6 are the range of RIs for the 4 chrysotile bundles that were recorded as examples of the chrysotile detected in the JBP sample that were prepared by the CSM method (with HLS).

---

<sup>18</sup> Deposition of Dr. Mickey Gunter, Woods, Jesse & Sarah vs. Kolmar Laboratories Inc. et al. Supreme Court in the State of New York, County of Monroe, #E202000384

**Table 6**  
**Chrysotile**  
**Range of Parallel and Perpendicular RIs**

Chrysotile Bundle No.	RI Fluid	CSM PLM (with HLS) Parallel RI	CSM PLM (with HLS) Perpendicular RI	BIR Calculations $\gamma - \alpha$
M71614-001	1.560			
1		1.564	1.561	0.003
2		1.565	1.561	0.003
3		1.568	Avg. 1.559	0.009
4		Avg. 1.567	Avg. 1.562	0.005
		<b>Avg. 1.566</b>	<b>Avg. 1.561</b>	<b>0.005</b>

In addition to the chrysotile analysis using 1.560, fibrous talc in sample M71614-001 was analyzed with 1.560, that was collect from the pellet produced during the CSM sample preparation phase. The results of the analysis are shown in Table 7. The fibrous talc analysis can be found in Section 6 of this report.

**Table 7**  
**Fibrous Talc**  
**Range of Parallel and Perpendicular RIs**

Chrysotile Bundle No.	RI Fluid	Talc PLM (with HLS) Parallel RI	Talc PLM (with HLS) Perpendicular RI	BIR Calculations $\gamma - \alpha$
M71614-001	1.560			
1		>1.595	<1.550	>0.045
2		>1.600	<1.550	>0.050
3		>1.595	<1.550	>0.045
		<b>Avg. &gt;1.597</b>	<b>Avg. &lt;1.550</b>	<b>&gt;0.047</b>

### Birefringence Measurements

The key optical property to differentiate fibrous talc from chrysotile asbestos, when using the PLM method, is determining the difference in the birefringence (BIR) value between these two elongated minerals. Most PLM analysts will just use the PLM cross-polar condition to visually estimate the magnitude of the BIR (Low, Moderate or High) by the amount of brightness and change in wavelength colors that are observed.

This visual estimate of the amount of birefringence is typically done under cross-polar conditions and is a subjective interpretation by the PLM analyst, therefore, can lead to errors. A more accurate determination of BIR is to calculate the numerical BIR value by simply subtracting the measured perpendicular RI from the measured parallel RI ( $n_{||} - n_{\perp}$ ).

The subtracted BIR results give the analyst a numerical birefringence (BIR) value that is either classified as **Low (<0.01)**, **Moderate (0.01 to 0.05)** and **High (>0.05)**.

Fibrous talc and/or talc plates on edge will have a calculated BIR value that is typically at the high end of Moderate (0.045) to greater than 0.05 which is in the High BIR range. Chrysotile on the other hand, will have BIR values that range from the upper end of the Low range to the lower end of the Moderate range. The average calculated range BIRs, for the detected chrysotile bundles from the JBP sample for CSM PLM method was **0.003 to 0.009 (avg. 0.005)** which falls in the low end of BIR classifications. The fibrous talc analysis from the same sample had an average BIR that was at least 0.050 or the High range.

The BIR difference between fibrous talc and chrysotile, as demonstrated by MAS, is also verified by the EPA in their 600/R-93/116 PLM methodology document as shown in Table 2-2, page 21.

Table 2-2, "Optical Properties of Asbestos Fibers", provides four sets of refractive indexes measured from chrysotile bundles that have an overall average BIR of 0.011. This is in good agreement with the overall **MAS BIR avg. of 0.006** for the chrysotile bundles detected in the JBP sample for CSM sample preparation method.

In that same table, EPA published a range chrysotile BIR's of 0.004 to 0.017 (Low to moderate) with an average of 0.011. This BIR range reported by EPA, was from the Maximum and Minimum values obtained from references 2, 11, 12, and 18 located in Section 2.2.

The EPA R93 protocol also provides RI and BIR data for both fibrous talc and Flat cellulose Ribbons that can be found in their Table 2.5. For the RIs of fibrous talc example, EPA reports refractive index 1.600-1.540 with a measured BIR of 0.06, and for cellulose ribbons, the reported EPA RI's are 1.580-1.530 with a measured BIR of 0.05 as shown in Table 8, which agrees with the BIR calculated for the fibrous talc in the JBP sample itself.

**Table 8**  
**EPA-R93: Optical Properties of Selected Fibers**  
**Fibrous Talc & Cellulose Ribbons**

Fiber Type	RI Parallel/Perpendicular	BIR Calculations
Fibrous Talc	1.600-1.540	0.060 "High"
Cellulose	1.580-1.530	0.050 high end of Moderate

In summary, this data demonstrates that the reported chrysotile bundles in the JBP container sample analyzed by MAS have both the appropriate range of refractive indexes and BIR demonstrating that chrysotile asbestos was correctly identified in the container sample.

**Potential Asbestos Exposure to JBP:****M71614-001:**

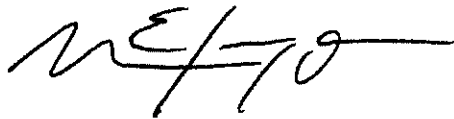
The average chrysotile bundle results for PLM analysis shows that one gram of 1.5 oz. (42 g) JBP contained an average of 56,000 chrysotile bundles per gram of talcum powder.

Multiplying 56,000 chrysotile bundles by 42 grams would equal approximately 2,352,000 chrysotile fibers/bundles, on average, in the one (1.5 oz.) JBP container.

Based on these results, it would be my opinion that the application of the talcum powder found in JBP container will cause significant exposure, over background, to chrysotile asbestos to individuals like Mr. Valadez, who used JBP brand talcum powder products for their intended purpose.

All of the opinions that I have stated in this report are held within a reasonable degree of scientific certainty and I reserve the right to supplement this report if any new information becomes available.

Sincerely,



---

William E. Longo, Ph.D.  
CEO

# Section 2

**Materials Analytical Services, LLC.**  
**CHAIN-OF-CUSTODY**

CLIENT: Kazan, McClain, Satterley &amp; Greenwood

CONTACT: Joe Satterley

PHONE: (510) 302-1000

CLIENT JOB NAME: A. Hernandez Valadez v. J &amp; J

CLIENT JOB#: 14-2979

CLIENT DOC(S): Letter of transmittal

FAX NUMBER: (510) 835-4913

MAS JOB: M71614

LOGIN DATE: 1/26/2023

SUBMITTED BY: Joe Satterley

TRANSPORT: UPS

RECEIVED BY: Kathy Molyneaux

CONDITION: Good

MAS LOCATION: Rm 123DATE/BY: CT 1/26/2023PREP BY: CTDATE: 1/26-2/27/23ANALYSIS BY: PHDATE: 2/27-28/2023QC BY: PHDATE: 2/28/2023REPORT BY: AVDATE: 2-28-2023REVIEWED BY: AVDATE: 2-28-2023

FINAL DISPOSITION BY: \_\_\_\_\_

LOCATION: Legal File Storage

DATE: \_\_\_\_\_

MAS # CLIENT ID VOLUME TYPE MATERIAL

MAS # CLIENT ID VOLUME TYPE MATERIAL

001 1

LOCATION Johnson's Baby Power Bottle, 1.5 oz.

SAMPLE(S) RETURNED BY: KV

DATE: \_\_\_\_\_

FEDEX TRACKING # \_\_\_\_\_

RECEIVED BY: 2-28-2023

DATE: \_\_\_\_\_

COMMENT PLM

Materials Analytical Services, LLC.

3945 Lakefield Court

Suwanee, Georgia 30024

(770) 866-3200

1/13/14 Revision 0

M71614

Page 1 of 1

**Materials Analytical Services, LLC.**  
**CHAIN-OF-CUSTODY**

CLIENT: Kazan, McClain, Satterley &amp; Greenwood

CONTACT: Joe Satterley

PHONE: (510) 302-1000

CLIENT JOB NAME: A. Hernandez Valadez v. J &amp; J

CLIENT JOB#: 14-2979

CLIENT DOC(S): Letter of transmittal

FAX NUMBER: (510) 835-4913

MAS JOB: M71614

LOGIN DATE: 1/26/2023

SUBMITTED BY: Joe Satterley

TRANSPORT: UPS

RECEIVED BY: Kathy Molyneaux

CONDITION: Good

MAS LOCATION: Rm 125DATE/BY: CT 1/26/2023PREP BY: CTDATE: 1/26-2/27/23ANALYSIS BY: J6CDATE: 2-28-2023QC BY: J6CDATE: 2-28-2023REPORT BY: AKDATE: 2-28-2023REVIEWED BY: AKDATE: 2-28-2023

FINAL DISPOSITION BY

LOCATION: Left Pile Storage

DATE: \_\_\_\_\_

MAS # CLIENT ID VOLUME TYPE MATERIAL

MAS # CLIENT ID VOLUME TYPE MATERIAL

001 1

LOCATION Johnson's Baby Power Bottle, 1.5 oz.

SAMPLE(S) RETURNED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

FEDEX TRACKING # \_\_\_\_\_

RECEIVED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

COMMENT TGM

Materials Analytical Services, LLC.

3945 Lakefield Court

Suwanee, Georgia 30024

(770) 866-3200

1/13/14 Revision 0

M71614

Page 1 of 1



**Kazan, McClain, Satterley  
& Greenwood<sup>SM</sup>**

A Professional Law Corporation  
KAZANLAW.COM

January 25, 2023

**Via UPS**

Dr. William Longo  
MAS  
3945 Lakefield Court  
Suwanee, GA 30024

Re: ***Anthony Hernandez Valadez v. Johnson & Johnson, et al.***  
Alameda County Superior Court Case No. 22CV012759

Dear Dr. Longo:

Enclosed please find one Johnson's Baby Powder bottle purchased on September 20, 2022 near Mr. Valadez' home in Merced, California. In 2022, Johnson's Baby Powder is still being sold. Please call me upon receipt.

Very truly yours,

/s/ Joseph Satterley

Joseph Satterley

JS:js

Rec'd  
1/26/2023  
K. Modyanov





Courtyard by Marriott® Merced  
750 Motel Dr, Merced Ca 95341 P 209.725.1221  
Marriott.com/MCECY

Market Market

Room: MKT

Room Type: HSE

Number of Guests: 0

Rate: \$0.00

Clerk: JKL

Arrive: 20Sep22

Time: 06:26PM

Depart: 20Sep22

Time: 06:26PM

Folio Number: 23793

DATE	DESCRIPTION	CHARGES	CREDITS
20Sep22	Market Sundries	3.19	
20Sep22	Sales Tax	0.28	
20Sep22	Master Card		3.47
Card #: MCXXXXXXXXXXXX3508/XXXX			
Card Type: MASTERCARD Card Entry: CHIP Approval Code: 60261Q			
App Label: Mastercard AID: A0000000041010			

**BALANCE: 0.00**

As a Marriott Bonvoy Member, you could have earned points towards your free dream vacation today. Start earning points and Elite status, plus enjoy exclusive member offers. Enroll today at the front desk.

If you enjoyed your stay with us, please leave us a review online!

See our "Privacy & Cookie Statement" on Marriott.com.

Operated under license from Marriott International, Inc. or one of its affiliates.

Bring the Courtyard sleep experience home with you. Visit ShopCourtyard.com.

## UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.
2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.
3. **GETTING YOUR SHIPMENT TO UPS**  
**Customers with a Daily Pickup**  
Your driver will pickup your shipment(s) as usual.

**Customers without a Daily Pickup**

Take your package to any location of The UPS Store®, UPS Access Point™ location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.

Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.  
Hand the package to any UPS driver in your area.

UPS Access Point™  
THE UPS STORE  
909 MARINA VILLAGE PKWY  
ALAMEDA, CA 94501

UPS Access Point™  
THE UPS STORE  
1001 BROADWAY  
OAKLAND, CA 94607

UPS Access Point™  
JACKSON'S LIQUOR  
739 E 12TH ST  
OAKLAND, CA 94606

FOLD HERE

1 LBS 1 OF 1 DWT: 16,11,3 SHIP TO: DR. WILLIAM LONGO 5103021013 MAS 3945 LAKEFIELD COURT SUWANEE GA 30024-1256	GA 300 9-09 	1 UPS NEXT DAY AIR TRACKING #: 1Z 863 722 01 9852 0234		BILLING: P/P	Case Name: Valadez CS 23.0.00. WNTNV50 4.0A 01/2023*	

This website uses cookies

We do this to better understand how visitors use our site and to offer you a more personal experience. Please see our [Privacy Notice \(https://www.ups.com/us/en/help-center/legal-terms-conditions/privacy-notice.page\)](https://www.ups.com/us/en/help-center/legal-terms-conditions/privacy-notice.page) for more information. You can manage your preferences by selecting [Cookie Settings](#).

# Section 3

# PLM Analysis

**MATERIALS ANALYTICAL SERVICES, LLC**  
**PLM ANALYSIS**

Proj#-Spl# M71614 - 001CSM Analyst Paul Hess Date 2/27/2023  
 ClientName Kazan, McClain, Satterley & Greenwood ClientSpl 1  
 Location Johnson's Baby Power Bottle, 1.5 oz.  
 Type\_Mat \_\_\_\_\_  
 Gross debris on filter % of Sample 100  
 Visual \_\_\_\_\_ Temp ( $\pm 1^{\circ}\text{C}$ ) 22

**OPTICAL DATA FOR ASBESTOS IDENTIFICATION**

Morphology	wavy		
Pleochroism	none		
Refract Index	**		
$\alpha / \gamma$ (nm)	650 510		
Sign^	positive		
Extinction	parallel		
Birefringence	*		
Melt	no		
Fiber Name	Chrysotile		

**ASBESTOS MINERALS**

**EST. VOL. %**

Chrysotile..... 0.002 to 0.004  
 Amosite.....  
 Crocidolite.....  
 Tremolite/Actinolite.....  
 Anthophyllite.....

**OTHER FIBROUS COMPONENTS**

Talc-fibrous \*\*\*  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**NON FIBROUS COMPONENTS**

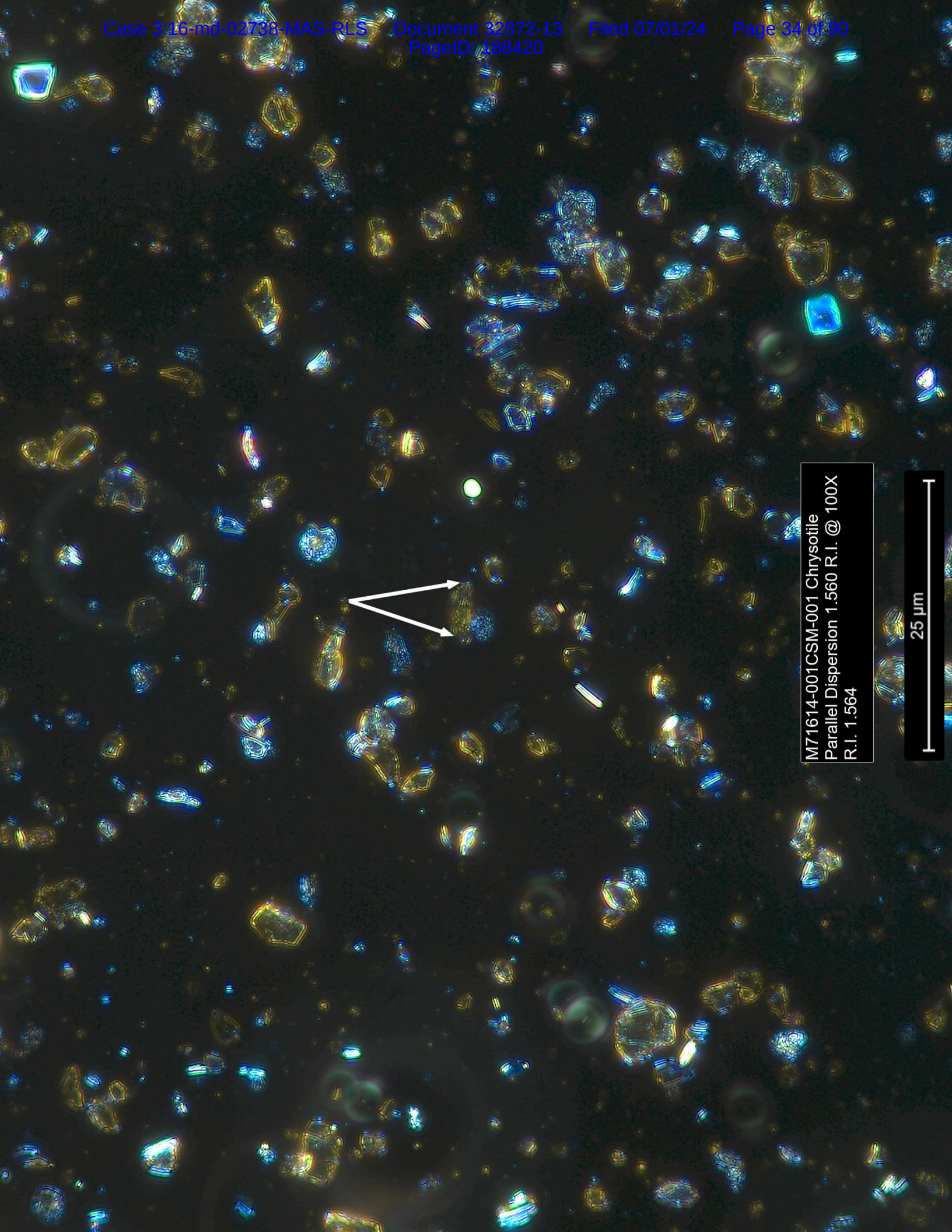
\_\_\_\_\_

Talc	X
Particulate	X
_____	_____

**Comments**

Chrysotile asbestos observed. \*\* Refractive indices parallel ranged 1.564(550nm) to 1.568(510nm). Refractive indices perpendicular range 1.557(650nm) to 1.564(550nm). \*\*\* Trace fibrous Talc observed. \*Birefringence from low to moderate. X=Materials Detected. Six Chrysotile structures, inclusive of those documented by photograph, counted in 30 fields of view. Equates to 0.3 structure per square millimeter.

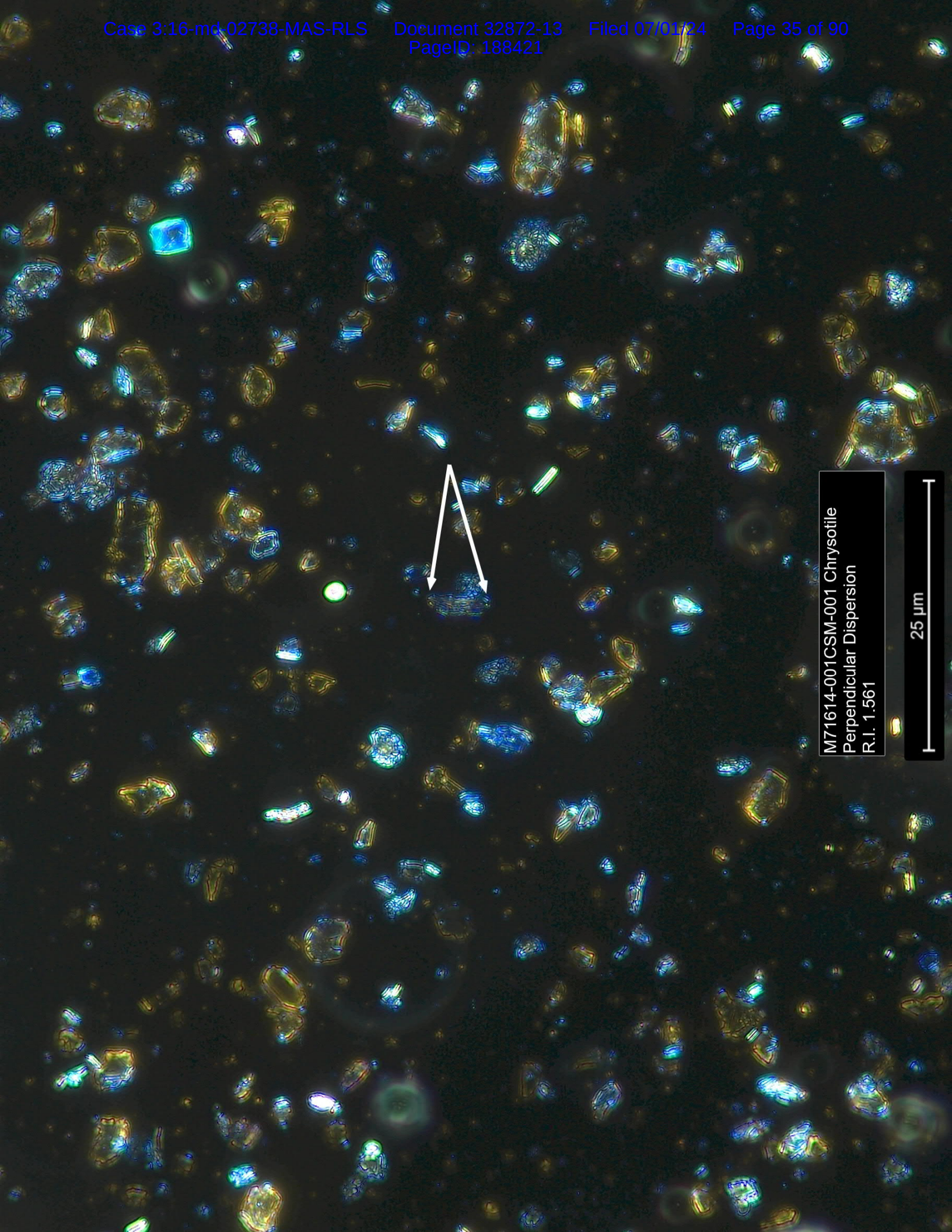




M71614-001CSM-001 Chrysotile  
Parallel Dispersion 1.560 R.I. @ 100X  
R.I. 1.564

25  $\mu$ m

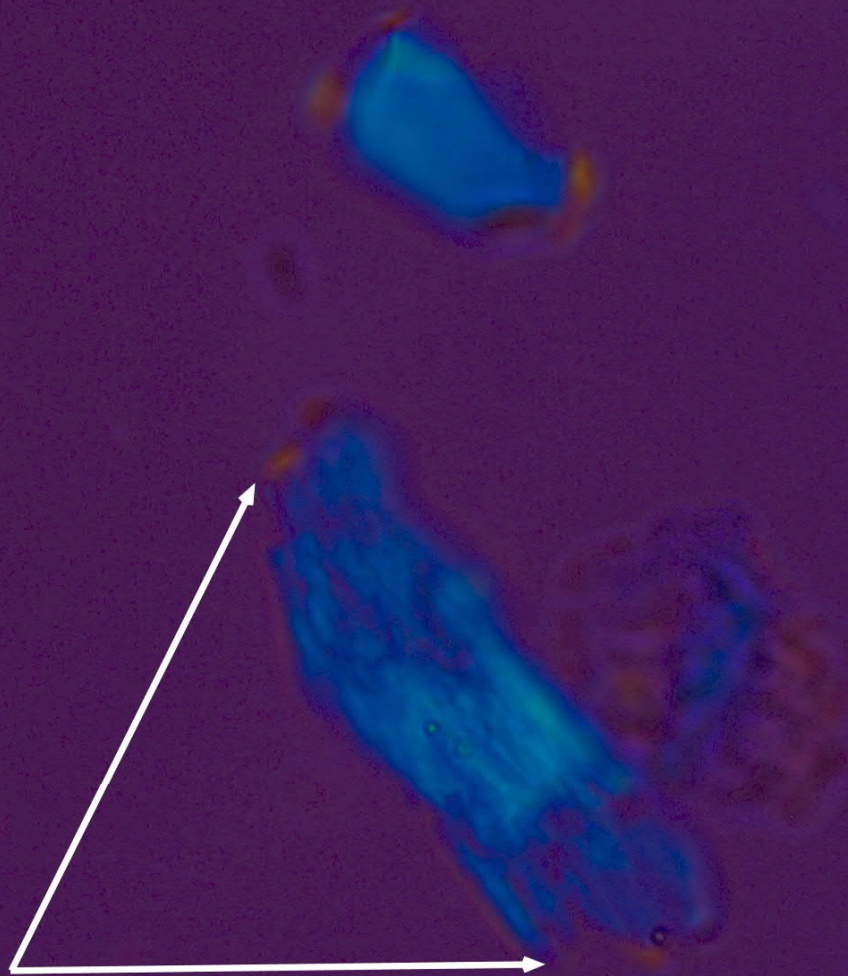




M71614-001CSM-001 Chrysotile  
Perpendicular Dispersion  
R.I. 1.561

25  $\mu$ m

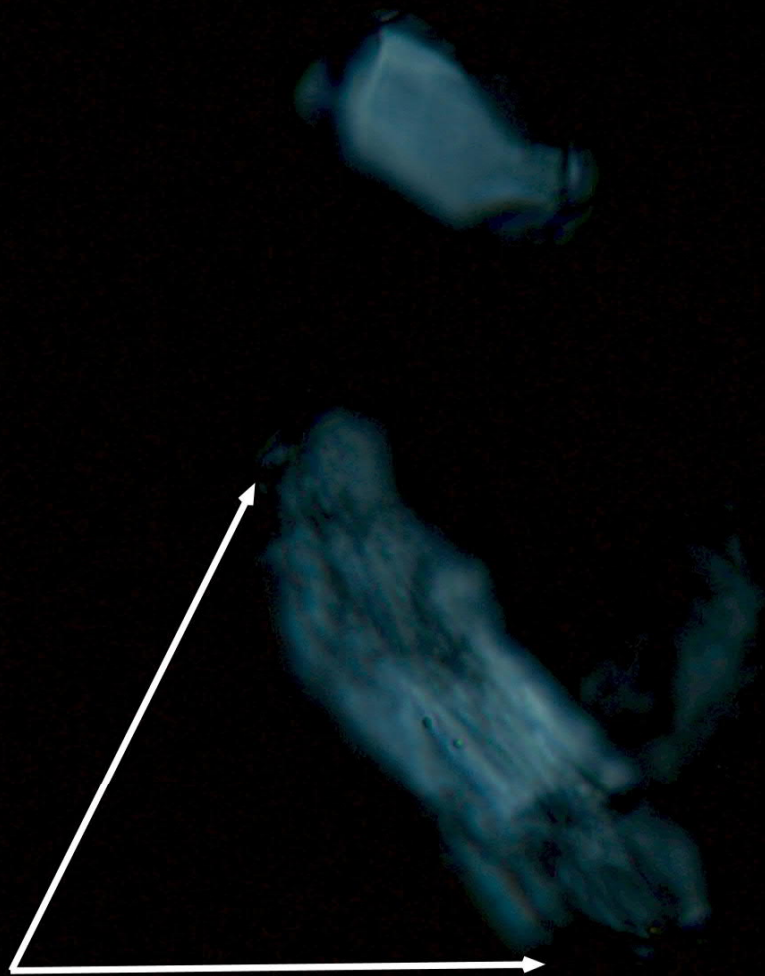




M71614-001CSM-001 Chrysothrix  
Elongation @ 630X

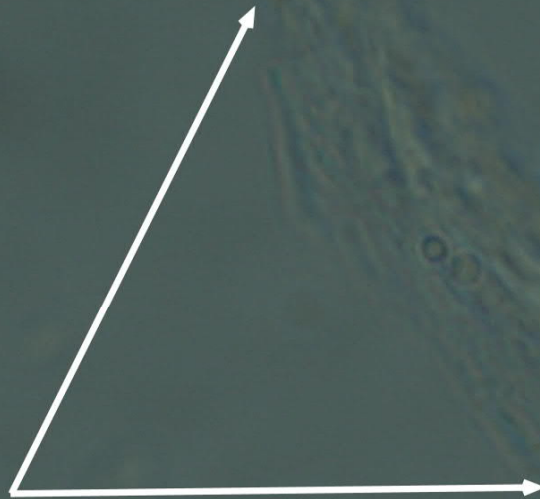
2.5  $\mu$ m





M71614-001CSM-001 Chrysotile  
Crossed Polars @ 630X

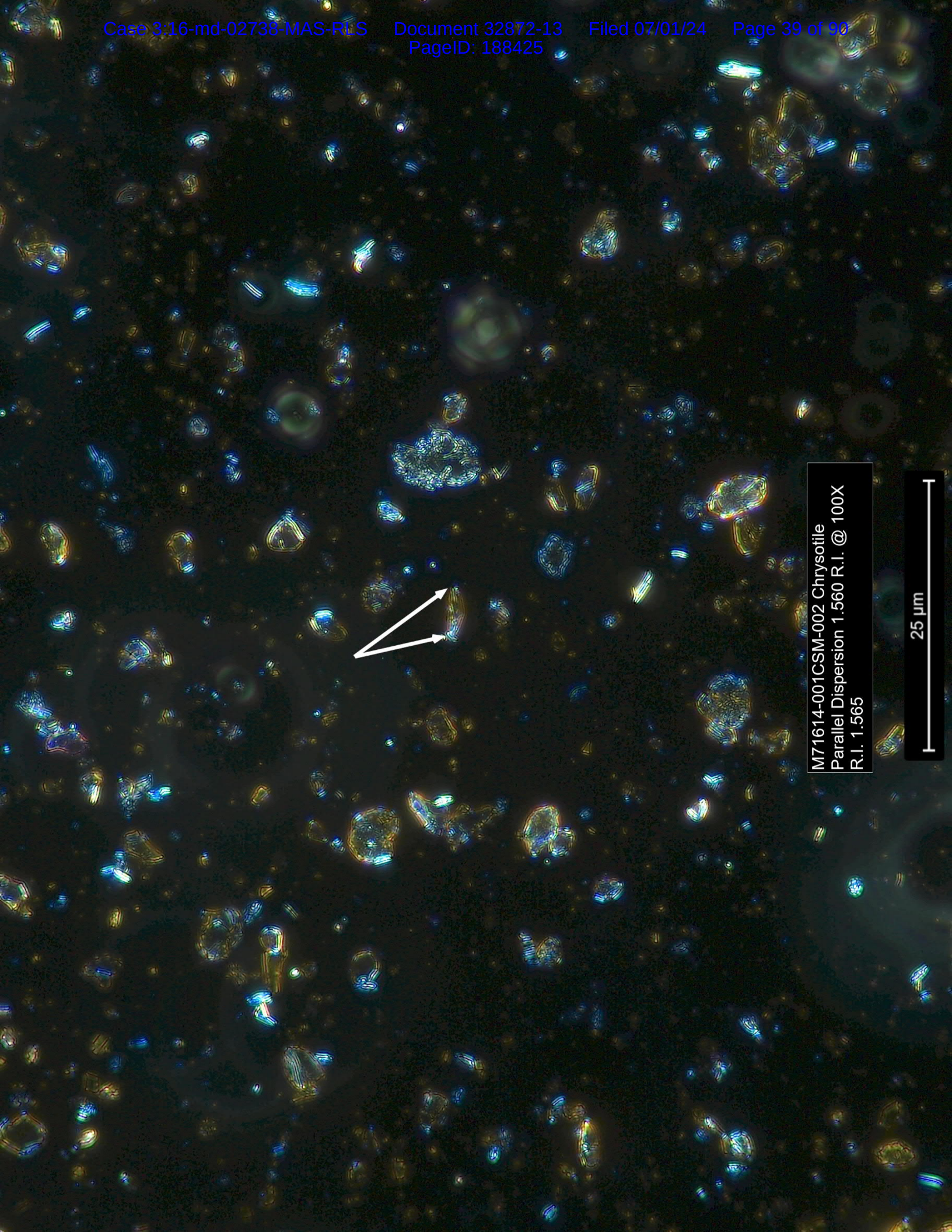
2.5  $\mu\text{m}$



M71614-001CSM-001 Chrysotile  
Polarizer out  
Aperture Diaphragm 95% closed  
1.560 R.I. @ 630X

2.5  $\mu\text{m}$

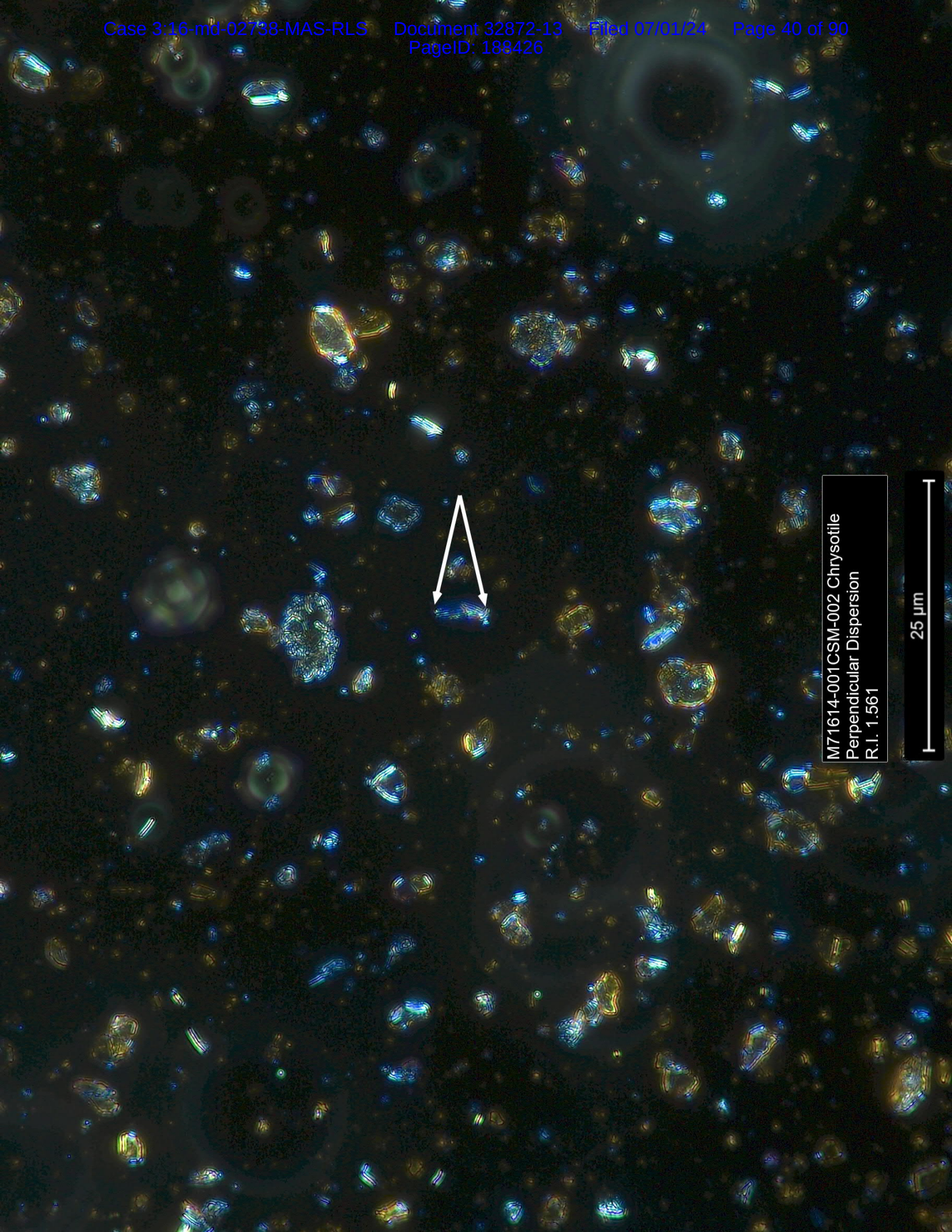




M71614-001CSM-002 Chrysotile  
Parallel Dispersion 1.560 R.I. @ 100X  
R.I. 1.565

25  $\mu$ m

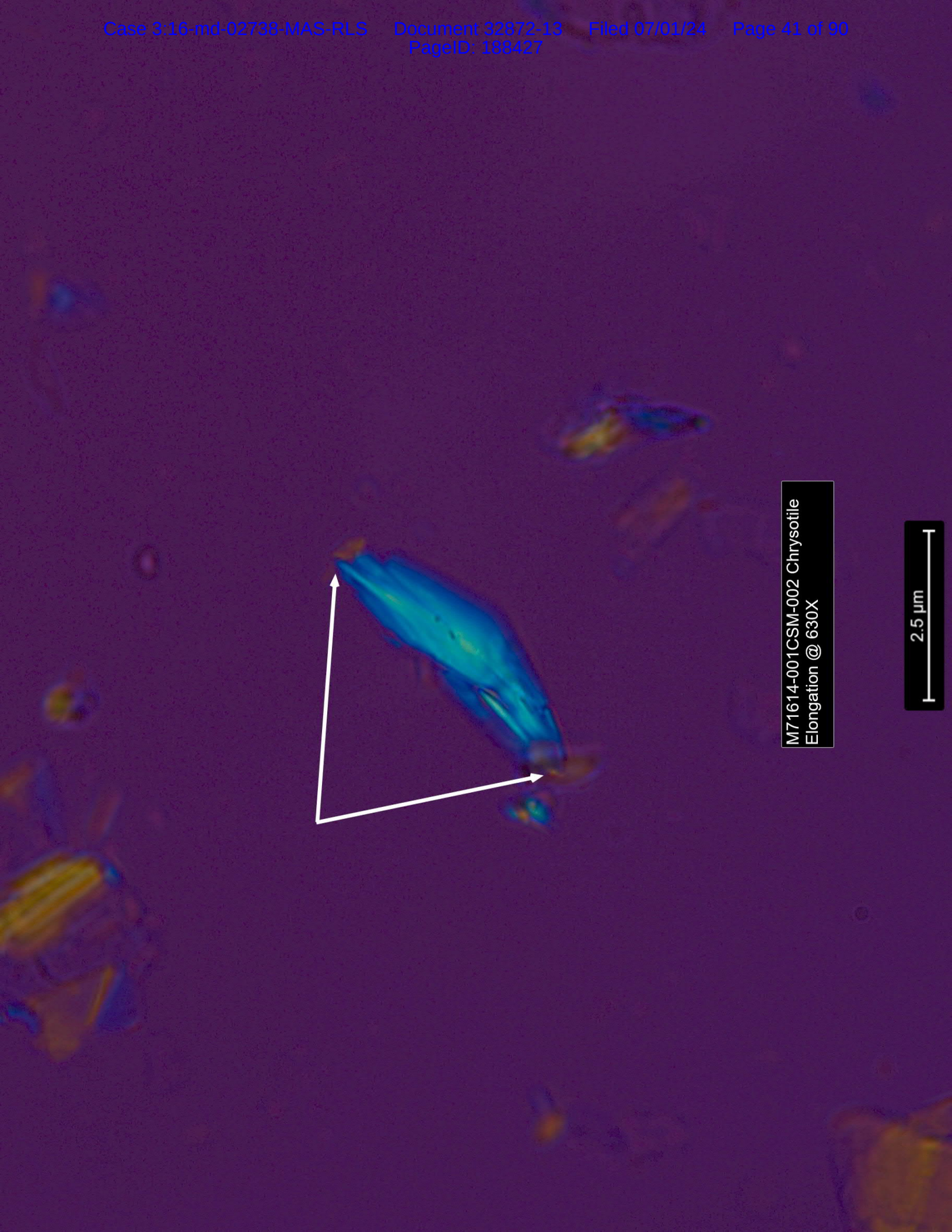




M71614-001CSM-002 Chrysotile  
Perpendicular Dispersion  
R.I. 1.561

25  $\mu$ m

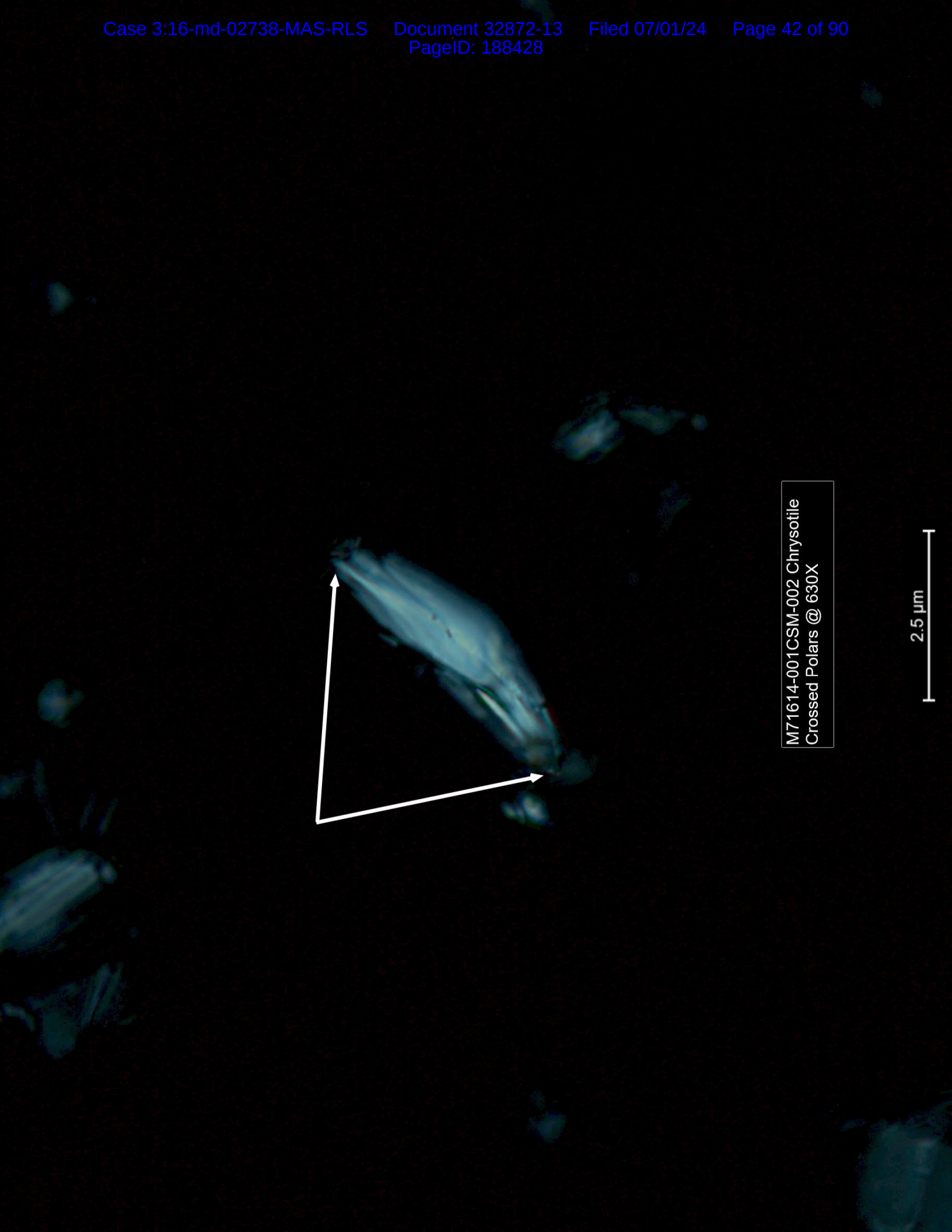




M71614-001CSM-002 Chrysotile  
Elongation @ 630X

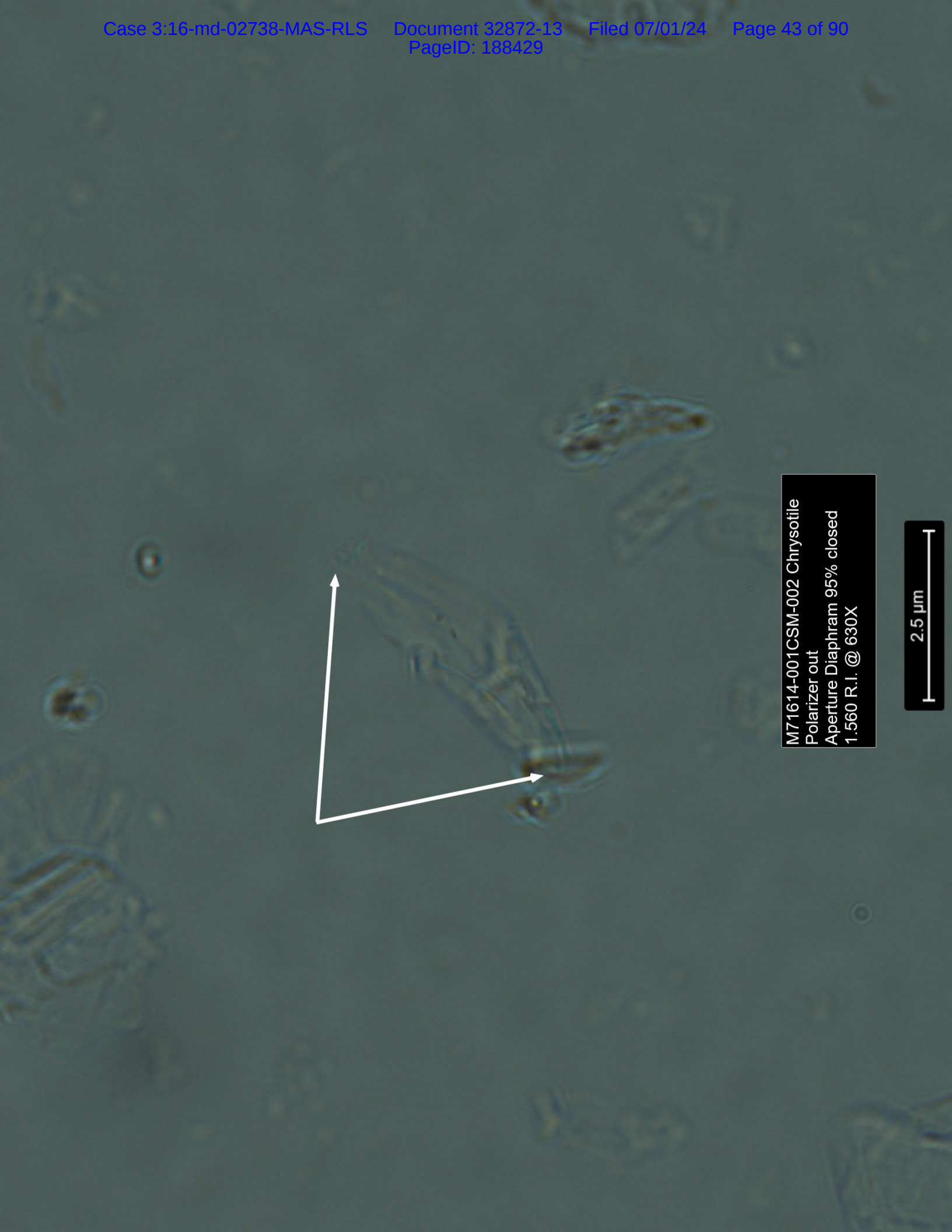
2.5  $\mu\text{m}$





M71614-001CSM-002 Chrysotile  
Crossed Polars @ 630X

2.5  $\mu\text{m}$

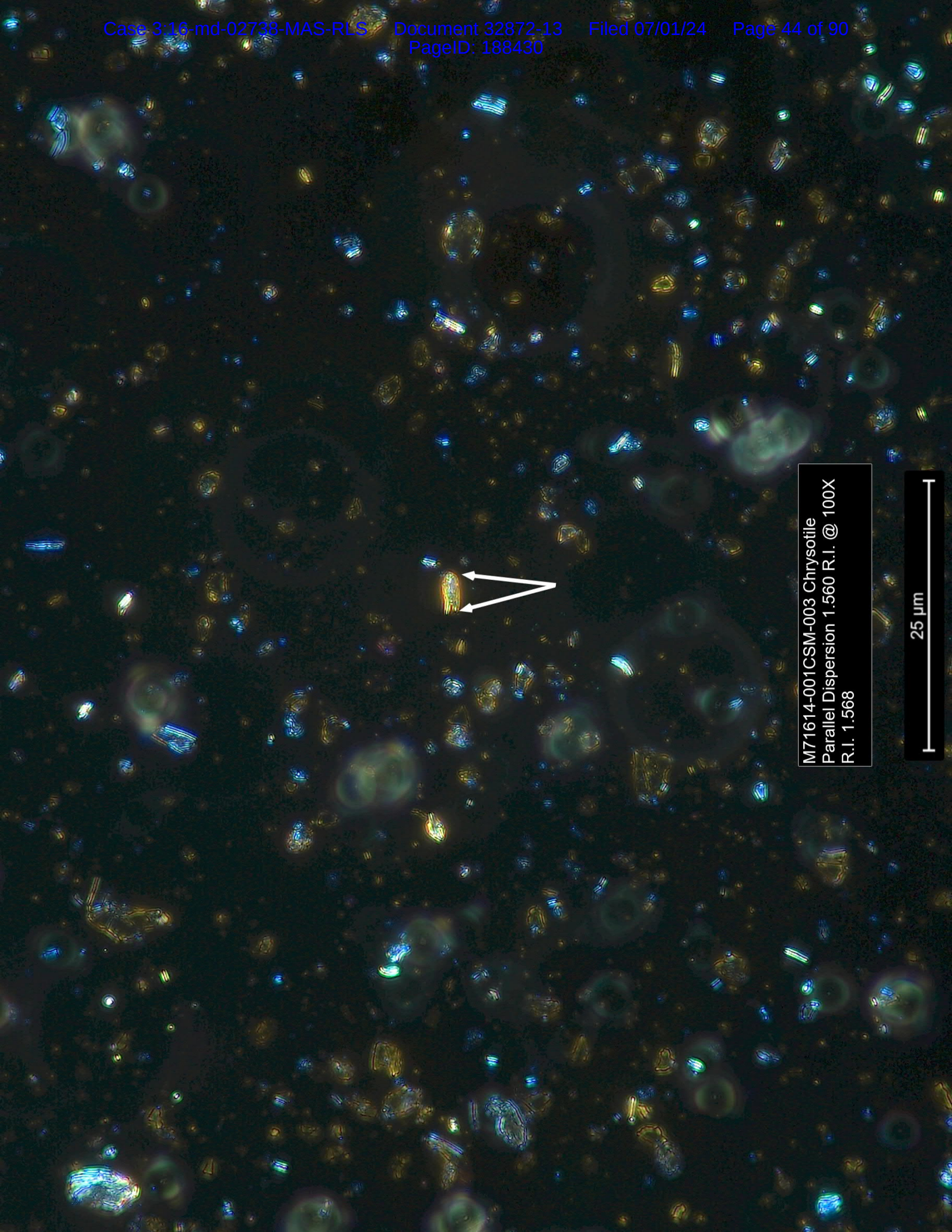


A polarized light micrograph showing several elongated, needle-shaped chrysotile fibers. The fibers exhibit characteristic Maltese cross patterns under polarized light. A white arrow points to a specific fiber. A scale bar in the bottom right indicates 2.5 micrometers.

M71614-001CSM-002 Chrysotile  
Polarizer out  
Aperture Diaphragm 95% closed  
1.560 R.I. @ 630X

2.5  $\mu\text{m}$

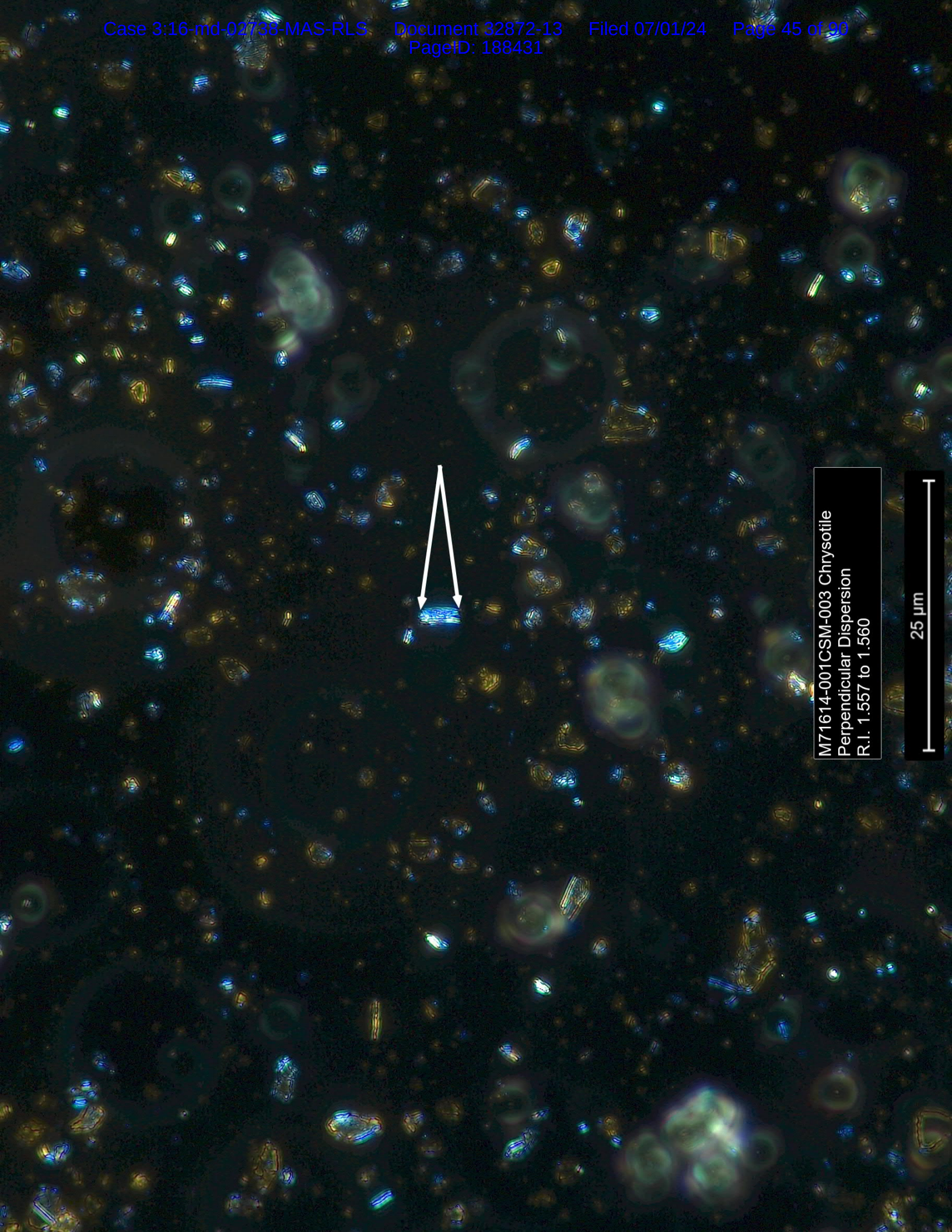




M71614-001CSM-003 Chrysotile  
Parallel Dispersion 1.560 R.I. @ 100X  
R.I. 1.568

25  $\mu$ m





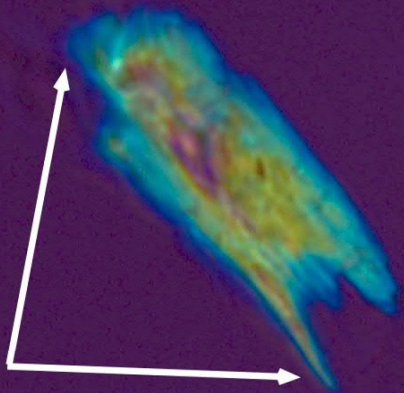
M71614-001CSM-003 Chrysotile  
Perpendicular Dispersion  
R.I. 1.557 to 1.560

25  $\mu$ m

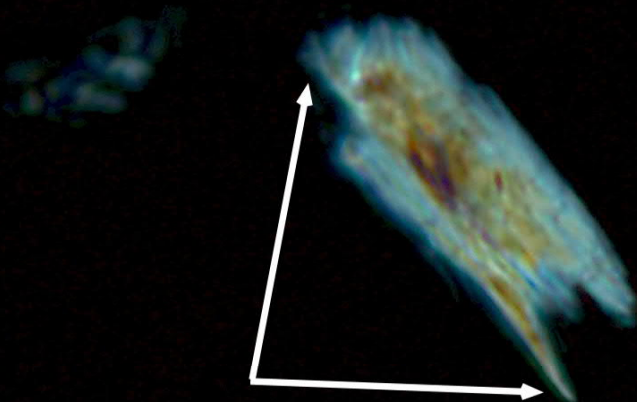


M71614-001CSM-003 Chrysotile  
Elongation @ 630X

2.5  $\mu\text{m}$

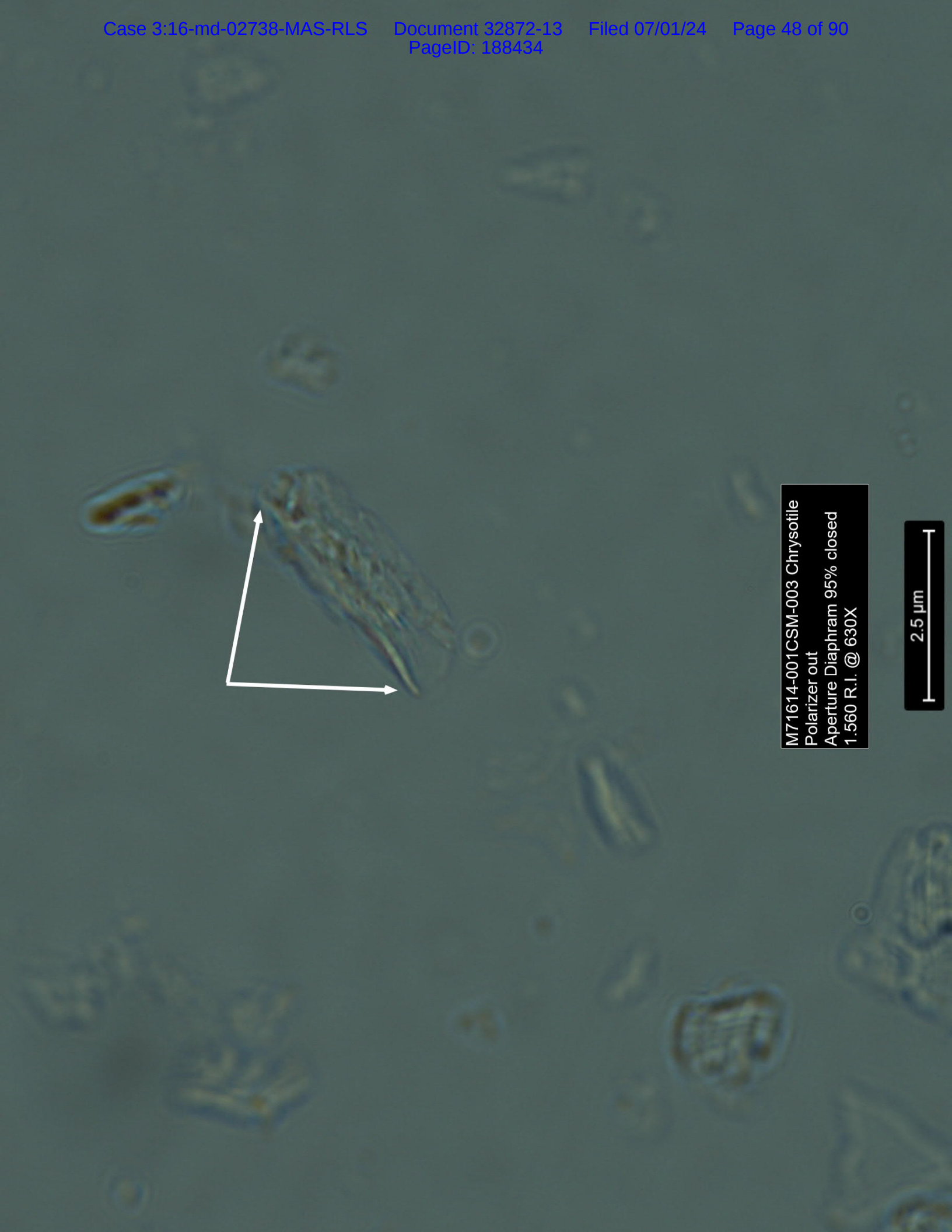






M71614-001CSM-003 Chrysotile  
Crossed Polars @ 630X

2.5  $\mu$ m

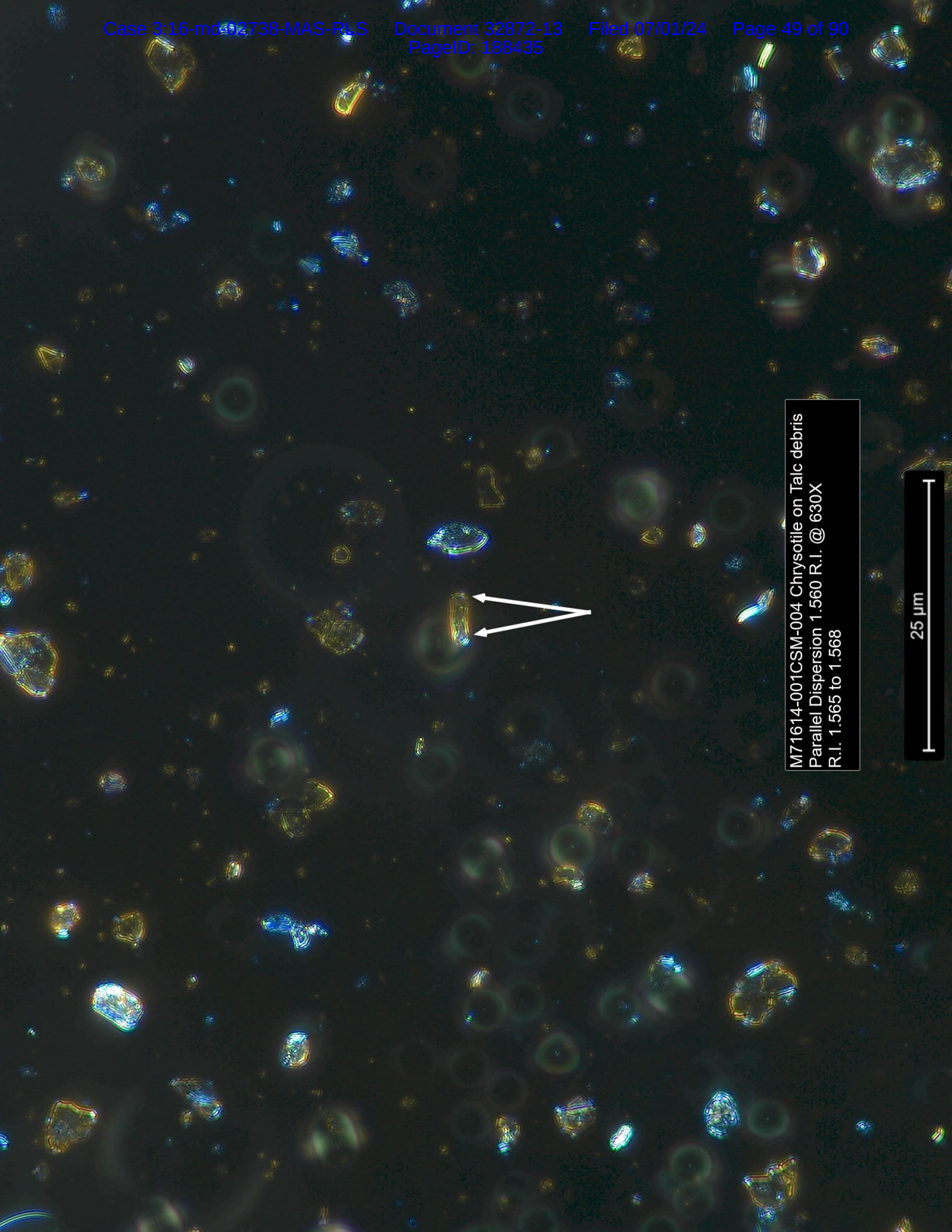


A micrograph showing several Chrysotile fibers. One fiber is highlighted with a white arrow pointing to its upper end. The fiber is elongated and shows internal structural details. Other fibers are visible in the background, some appearing as small circular cross-sections.

M71614-001CSM-003 Chrysotile  
Polarizer out  
Aperture Diaphragm 95% closed  
1.560 R.I. @ 630X

2.5  $\mu\text{m}$

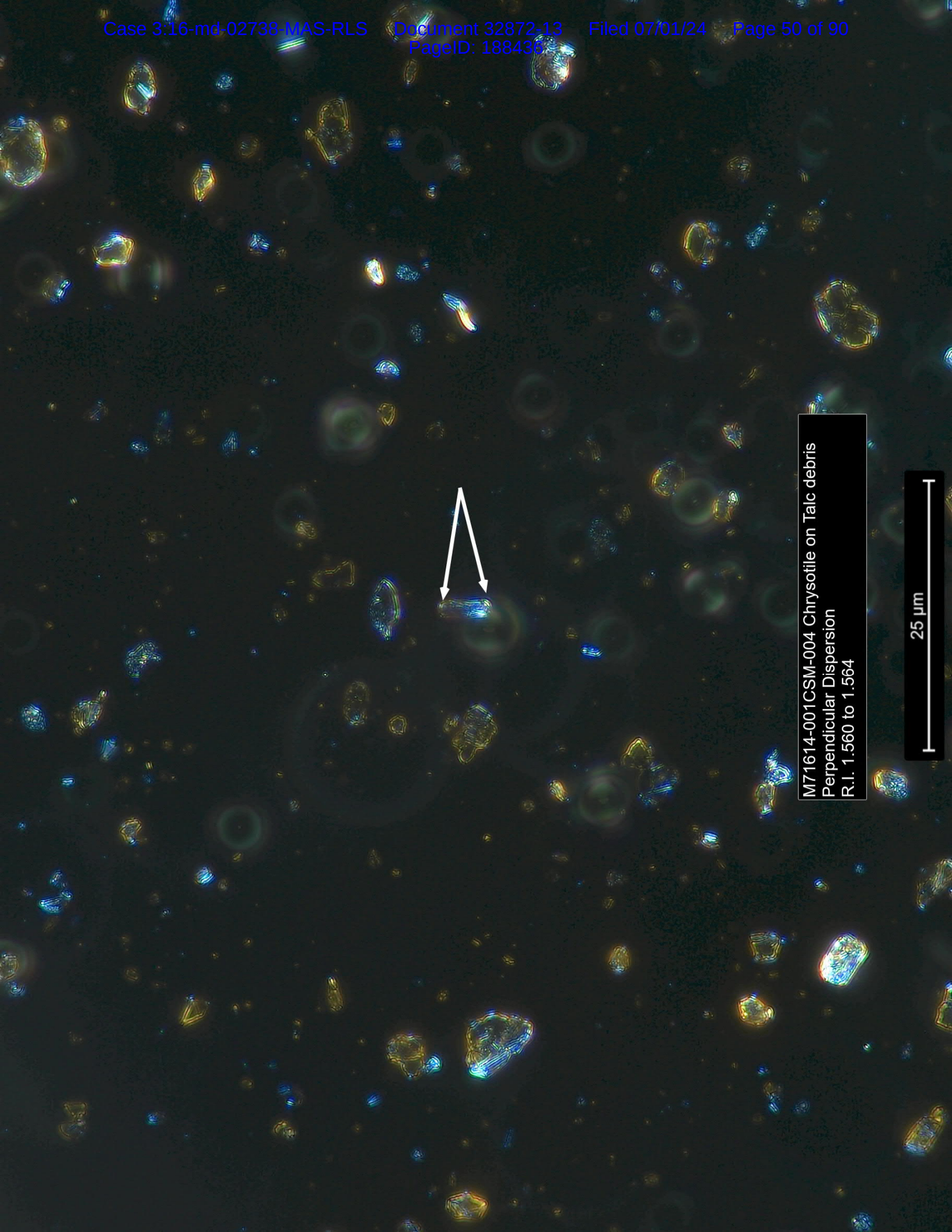




M71614-001CSM-004 Chrysotile on Talc debris  
Parallel Dispersion 1.560 R.I. @ 630X  
R.I. 1.565 to 1.568

25  $\mu$ m

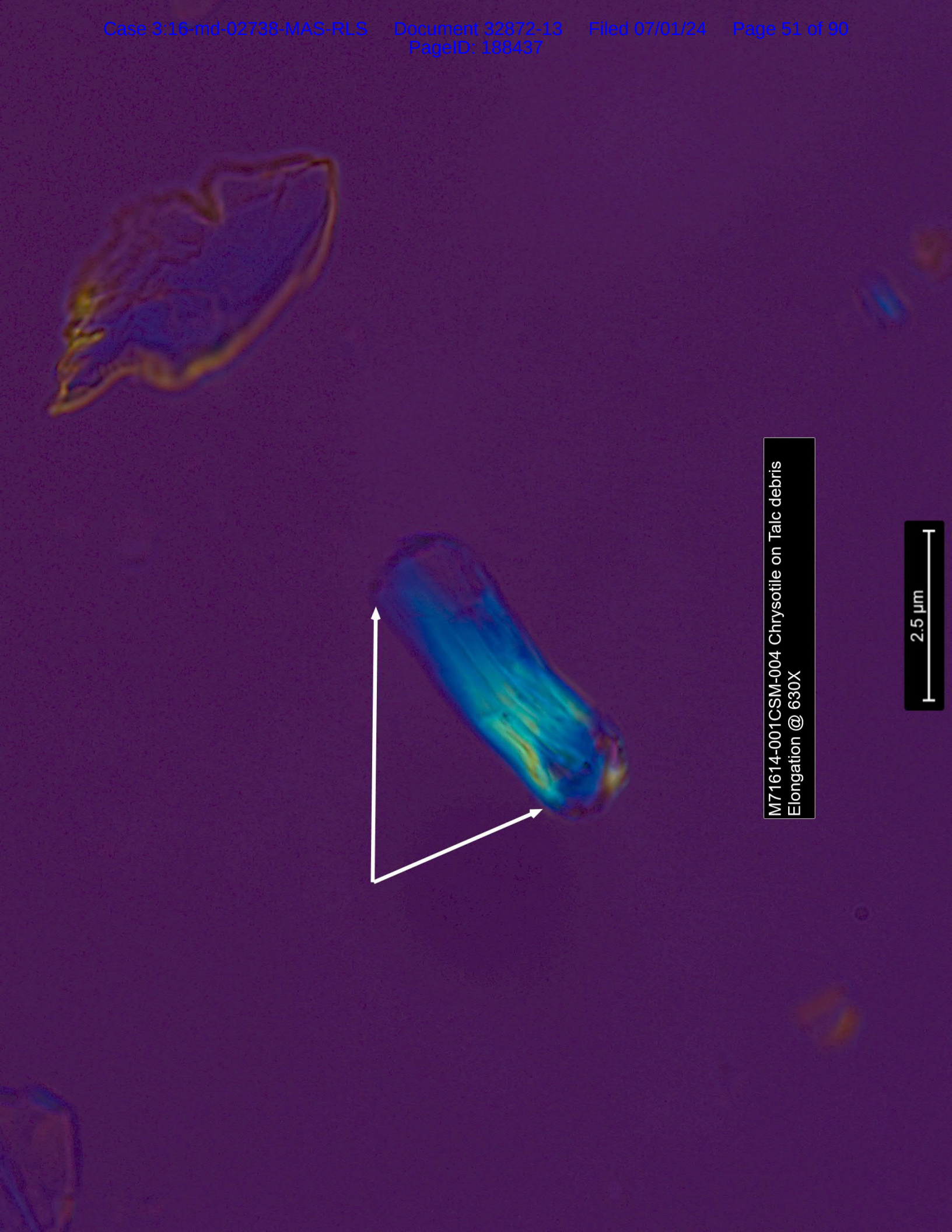




M71614-001CSM-004 Chrysotile on Talc debris  
Perpendicular Dispersion  
R.I. 1.560 to 1.564

25  $\mu$ m

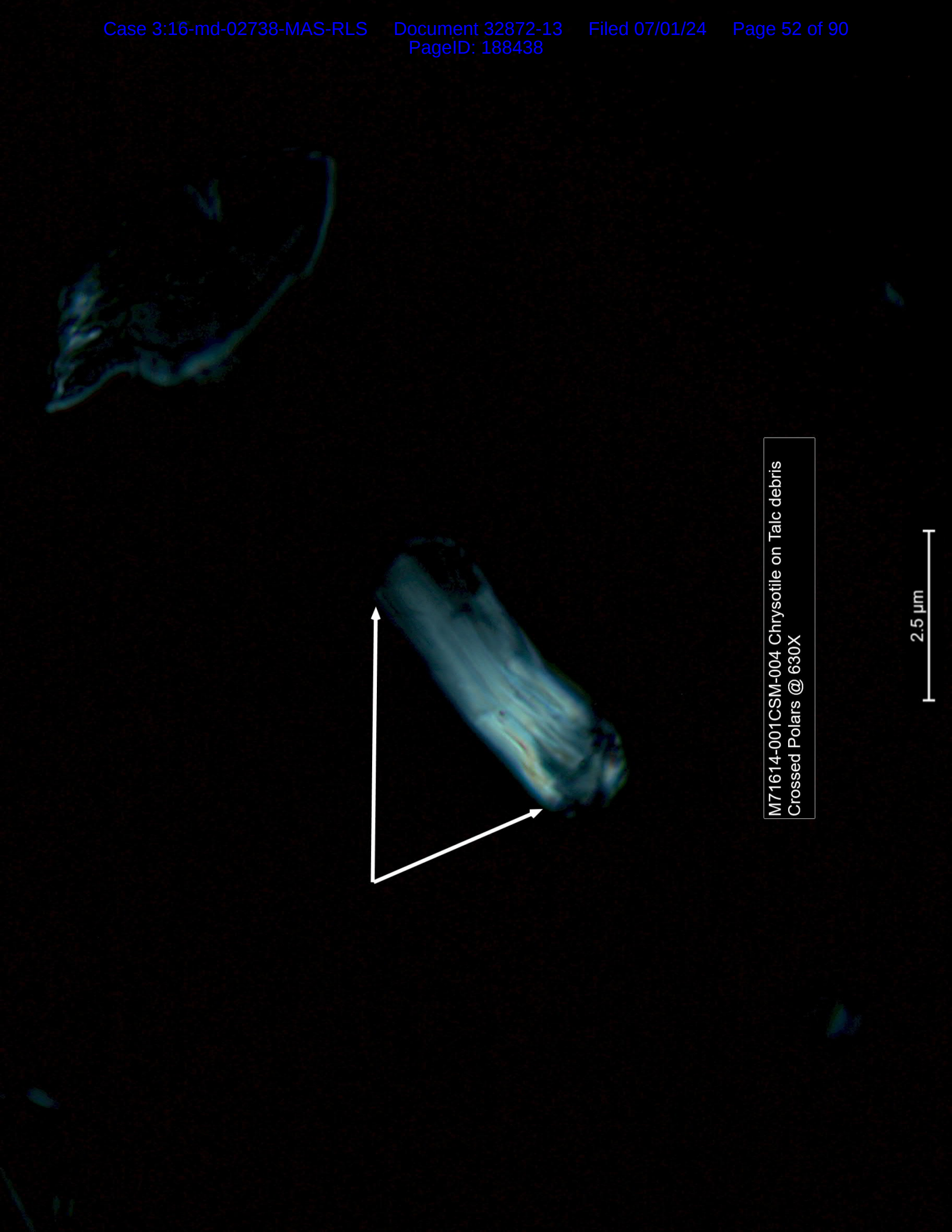




M71614-001CSM-004 Chrysotile on Talc debris  
Elongation @ 630X

2.5  $\mu\text{m}$





M71614-001CSM-004 Chrysotile on Talc debris  
Crossed Polars @ 630X

2.5 μm



M71614-001CSM-004 Chrysotile on Talc debris  
Polarizer out  
Aperture Diaphragm 95% closed  
1.560 R.I. @ 630X

2.5  $\mu$ m

**MATERIALS ANALYTICAL SERVICES, LLC**  
**PLM ANALYSIS**

Proj#-Spl# M71614 - 001ISONY Analyst Paul Hess Date 2/28/2023  
 ClientName Kazan, McClain, Satterley & Greenwood ClientSpl 1  
 Location Johnson's Baby Power Bottle, 1.5 oz.  
 Type\_Mat \_\_\_\_\_  
 Gross debris on filter % of Sample 100  
 Visual \_\_\_\_\_ Temp ( $\pm 1^{\circ}\text{C}$ ) 21

**OPTICAL DATA FOR ASBESTOS IDENTIFICATION**

Morphology			
Pleochroism			
Refract Index			
$\alpha / \gamma$ (nm)			
Sign^			
Extinction			
Birefringence			
Melt			
Fiber Name			

**ASBESTOS MINERALS****EST. VOL. %**

NO ASBESTOS OBSERVED

Chrysotile.....  
 Amosite.....  
 Crocidolite.....  
 Tremolite/Actinolite.....  
 Anthophyllite.....

**OTHER FIBROUS COMPONENTS**

Talc-fibrous \*\*\*  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**NON FIBROUS COMPONENTS**

\_\_\_\_\_  
 \_\_\_\_\_  
 Talc X  
 Particulate X  
 \_\_\_\_\_

**Comments** X = Materials detected. Analyzed for regulated Amphiboles. No regulated Amphiboles observed. \*\*\*Trace fibrous Talc observed.



# TEM Analysis

TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-001		Grid Box #	8865	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G. O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	0.02122			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	30%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm²			1.166

Str. #	Grid Opening	Structure	Asbestos Type	Length	Width	Ratio	SAED	EDS
NSD	A1-A3							
NSD	A4							
NSD	A5							
NSD	A6							
NSD	A7							
NSD	A8							
NSD	A9							
NSD	B1							
NSD	B2							
NSD	B3							
NSD	B4							
NSD	B5							
NSD	B6							
NSD	B7							
NSD	B8							
NSD	B9							
NSD	B10							
NSD	C1							
NSD	C2							
NSD	C3							
NSD	C4							
NSD	C5							
NSD	C6							
NSD	C7							
NSD	C8							
NSD	C9							
NSD	C10							
NSD	F1							
NSD	F2							
NSD	F3							
NSD	F4							
NSD	F5							
NSD	F6							
NSD	F7							
NSD	F8							
NSD	F9							
NSD	F10							
NSD	G1							
NSD	G2							
NSD	G3							
NSD	G4							
NSD	G5							
NSD	G6							
NSD	G7							
NSD	G8							
NSD	G9							
NSD	G10							
NSD	I3							
NSD	I4							
NSD	I5							

TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-001		Grid Box #	8865	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G. O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	0.02122			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	30%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm²			1.166

Str. #	Grid Opening	Structure	Asbestos Type	Length	Width	Ratio	SAED	EDS
NSD	A2-A1							
NSD	A2							
NSD	A3							
NSD	A4							
NSD	A5							
NSD	A6							
NSD	A7							
NSD	A8							
NSD	A9							
NSD	A10							
NSD	B1							
NSD	B2							
NSD	B3							
NSD	B4							
NSD	B5							
NSD	B6							
NSD	B7							
NSD	B8							
NSD	C1							
NSD	C3							
NSD	C4							
NSD	C5							
NSD	C6							
NSD	C7							
NSD	C8							
NSD	C9							
NSD	D1							
NSD	D2							
NSD	D4							
NSD	D5							
NSD	D6							
NSD	D7							
NSD	D8							
NSD	D9							
NSD	F2							
NSD	F3							
NSD	F4							
NSD	F6							
NSD	F7							
NSD	F10							
NSD	H1							
NSD	H2							
NSD	H3							
NSD	H4							
NSD	H5							
NSD	I1							
NSD	I2							
NSD	I3							
NSD	I4							
NSD	I7							

TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-001		Grid Box #	8865	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G. O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	0.02122			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	30%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm²			1.166

Str. #	Grid Opening	Structure	Asbestos Type	Length	Width	Ratio	SAED	EDS
--------	--------------	-----------	------------------	--------	-------	-------	------	-----

Org. Sample Wt.	Sample Wt. Post HL Separation	
0.02122	0.02122	g
Percent of Orig. Post Separation	100	(%)
Wt. Of Sample Analyzed	0.00001908	g
Filter size	1297	mm <sup>2</sup>
Number of Structures Counted	0	Str.
Structures per Gram of Sample	<52,000	Str./g

Detection Limit	5.24E+04	Str./g
Analytical Sensitivity	5.24E+04	Str./g

Case 3:16-md-02738-MAS-RLS Document 32872-13 Filed 07/01/24 Page 59 of 90

PageID: 189445

TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-001		Grid Box #	8865	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G.O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	0.02122			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	30%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm <sup>2</sup>			1.166

Str. #	Grid Opening	Str./Asb. Type	Length	Width	Ratio	SAED	EDS
NSD	A1-A3					No fibrous talc observed	



# Section 4

TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-000		Grid Box #	8860	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G. O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	N/A			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	1%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm²			1.166

Str. #	Grid Opening	Structure	Asbestos Type	Length	Width	Ratio	SAED	EDS
NSD	E9-B1							
NSD	B2							
NSD	B3							
NSD	B4							
NSD	B5							
NSD	B6							
NSD	B7							
NSD	B8							
NSD	B9							
NSD	B10							
NSD	C1							
NSD	C2							
NSD	C3							
NSD	C4							
NSD	C5							
NSD	C6							
NSD	C7							
NSD	C8							
NSD	C9							
NSD	C10							
NSD	D1							
NSD	D2							
NSD	D3							
NSD	D4							
NSD	D5							
NSD	D6							
NSD	D7							
NSD	D8							
NSD	D9							
NSD	D10							
NSD	G1							
NSD	G2							
NSD	G3							
NSD	G4							
NSD	G5							
NSD	G6							
NSD	G7							
NSD	G8							
NSD	G9							
NSD	G10							
NSD	H1							
NSD	H2							
NSD	H3							
NSD	H4							
NSD	H5							
NSD	H6							
NSD	H7							
NSD	H8							
NSD	H9							
NSD	H10							

TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-000		Grid Box #	8860	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G. O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	N/A			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	1%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm²			1.166

Str. #	Grid Opening	Structure	Asbestos Type	Length	Width	Ratio	SAED	EDS
NSD	E10-A1							
NSD	A2							
NSD	A3							
NSD	A4							
NSD	A5							
NSD	A6							
NSD	A7							
NSD	A8							
NSD	A9							
NSD	A10							
NSD	B1							
NSD	B2							
NSD	B3							
NSD	B4							
NSD	B5							
NSD	B6							
NSD	B7							
NSD	B8							
NSD	B9							
NSD	B10							
NSD	C1							
NSD	C2							
NSD	C3							
NSD	C4							
NSD	C5							
NSD	C6							
NSD	C7							
NSD	C8							
NSD	C9							
NSD	C10							
NSD	D1							
NSD	D2							
NSD	D3							
NSD	D4							
NSD	D5							
NSD	D6							
NSD	D7							
NSD	D8							
NSD	D9							
NSD	D10							
NSD	E1							
NSD	E2							
NSD	E3							
NSD	E4							
NSD	E5							
NSD	E6							
NSD	E7							
NSD	E8							
NSD	E9							
NSD	E10							



TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-000		Grid Box #	8860	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G. O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	N/A			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	1%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm²			1.166

Str. #	Grid Opening	Structure	Asbestos Type	Length	Width	Ratio	SAED	EDS
--------	--------------	-----------	------------------	--------	-------	-------	------	-----

Org. Sample Wt.	Sample Wt. Post HL Separation	
N/A	N/A	g
Percent of Orig. Post Separation	N/A	(%)
Wt. Of Sample Analyzed	N/A	g
Filter size	1297	mm <sup>2</sup>
Number of Structures Counted	0	Str.
<b>Structures per Gram of Sample</b>	N/A	Str./g

Detection Limit	N/A	Str./g
Analytical Sensitivity	N/A	Str./g

Case 3:16-md-02738-MAS-RLS Document 32872-13 Filed 07/01/24 Page 64 of 90

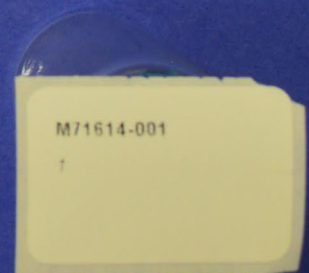
PageID: 189450

TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-000		Grid Box #	8860	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G.O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	N/A			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	1%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm <sup>2</sup>			1.166

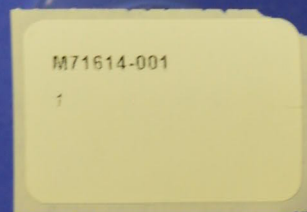
Str. #	Grid Opening	Str./Asb. Type	Length	Width	Ratio	SAED	EDS
NSD	E9-B1					No fibrous talc observed	

# Section 5

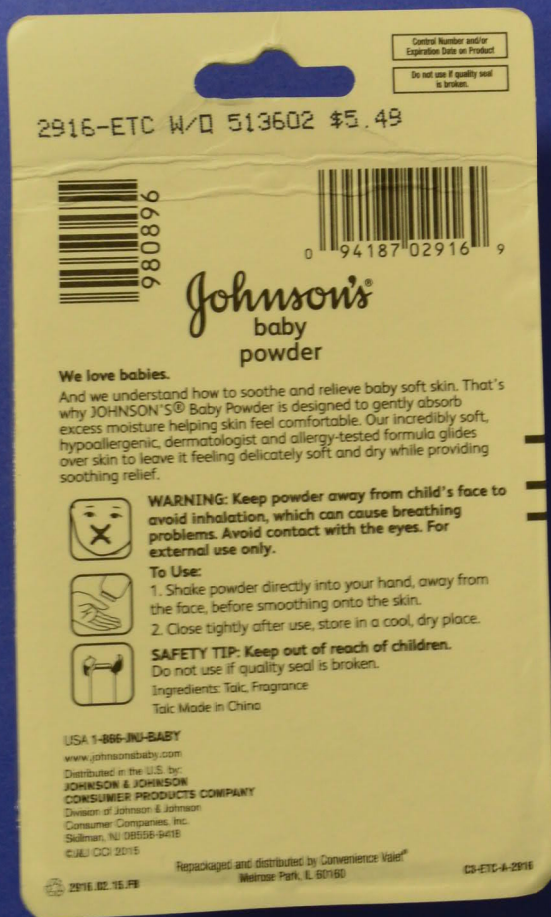






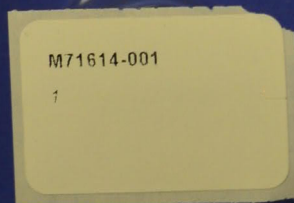
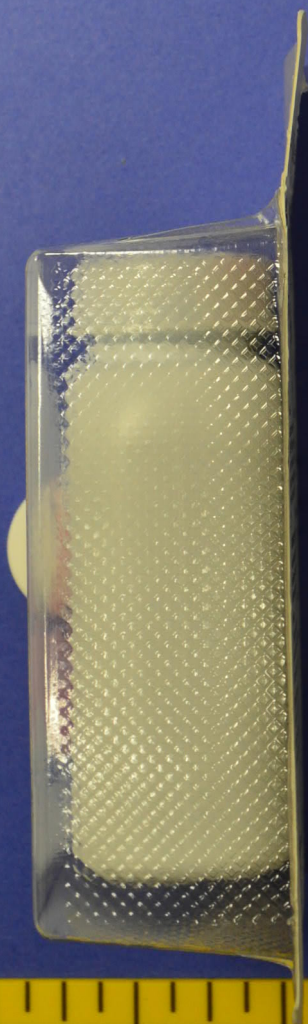




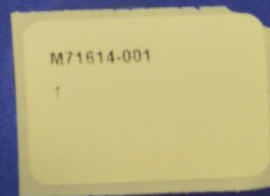


M71614-001

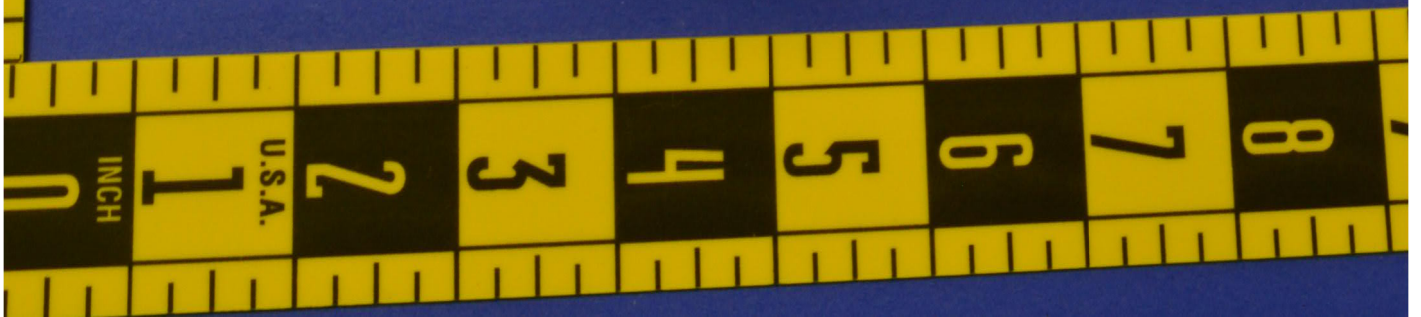
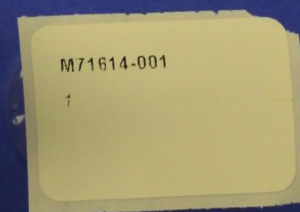
















M71614-001  
1





M71614-001

1







M71614-001

1





M71614-001

1

11219RA

TO USE: 1. Shake powder directly into your hand, away from the face, before smoothing onto the skin. 2. Close tightly after use, store in a cool, dry place.  
PARA USAR: 1. Antes de aplicarlo sobre la piel, agitar el polvo directamente en la mano, lejos de la cara. 2. Cerrar bien después de usar, y guardar en un lugar fresco y seco.  
INGREDIENTS: Talc\*, Fragrance  
\*naturally derived ingredient  
WARNING: Keep powder away from child's face to avoid inhalation, which can cause breathing problems. Avoid contact with eyes. For external use only. Close tightly after use. Keep out of reach of children. Do not use if quality seal is broken.  
ADVERTENCIA: Mantener al tanto al niño de la cara del polvo para evitar la inhalación, que puede causar problemas respiratorios. Evitar el contacto con los ojos. Para uso externo exclusivamente. Cerrar bien después de usar. Mantener fuera del alcance de los niños. No usar si el sello de seguridad está roto.  
Distributed by/Distribuido por: JOHNSON & JOHNSON CONSUMER INC., Skillman, NJ 08558 © JULIO 2018 www.johnsonsbaby.com  
Talc. Made in China Talco hecho en China



30042926





M71614-001

1





M71614-001

1





M71614-001

1







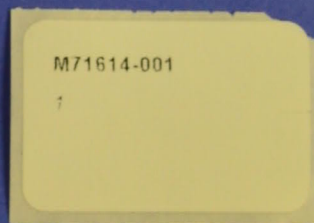
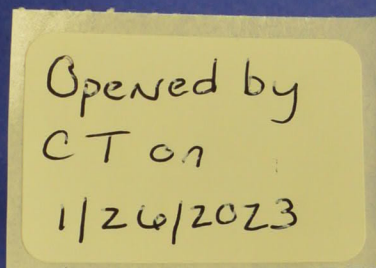
Opened by  
CT on  
1/26/2023



M71614-001  
1

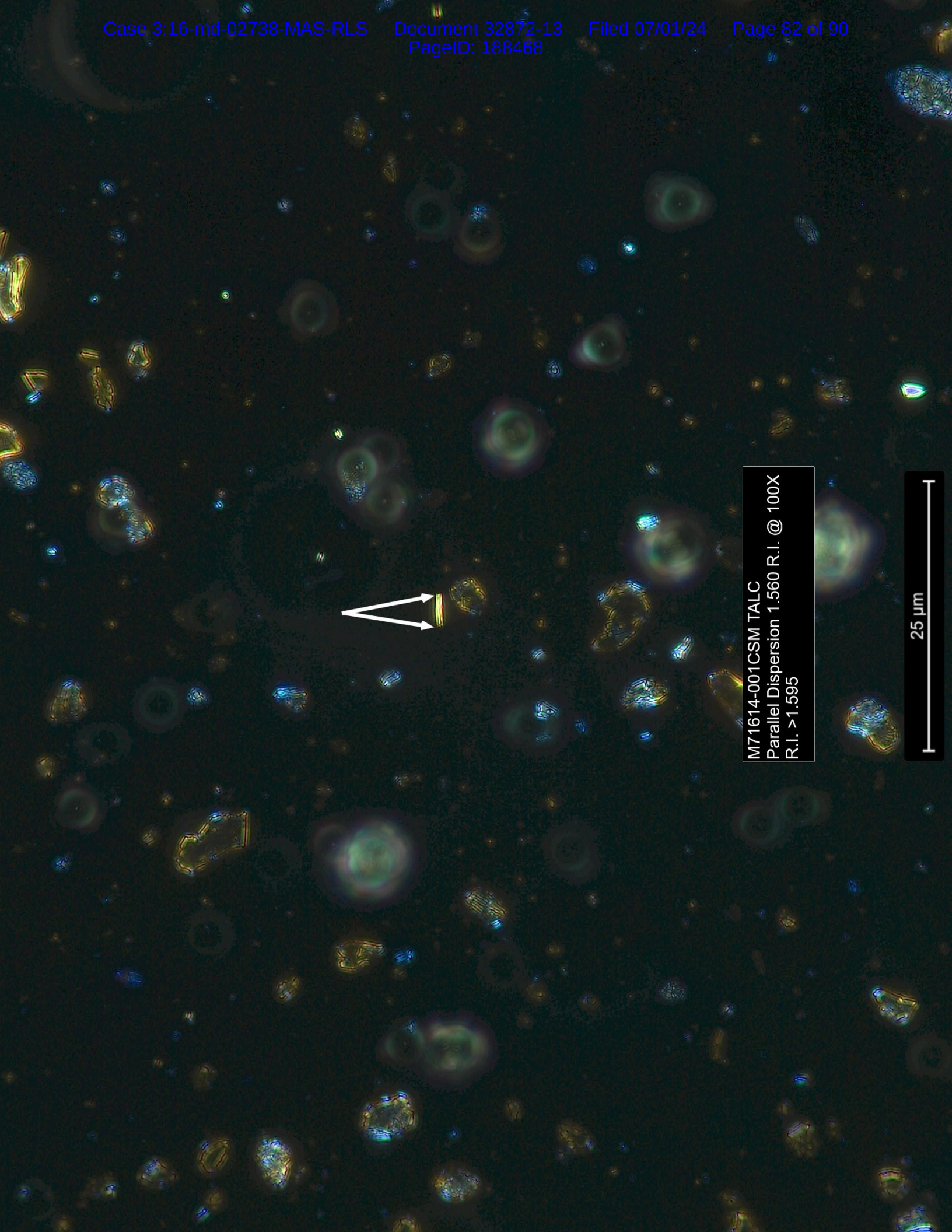








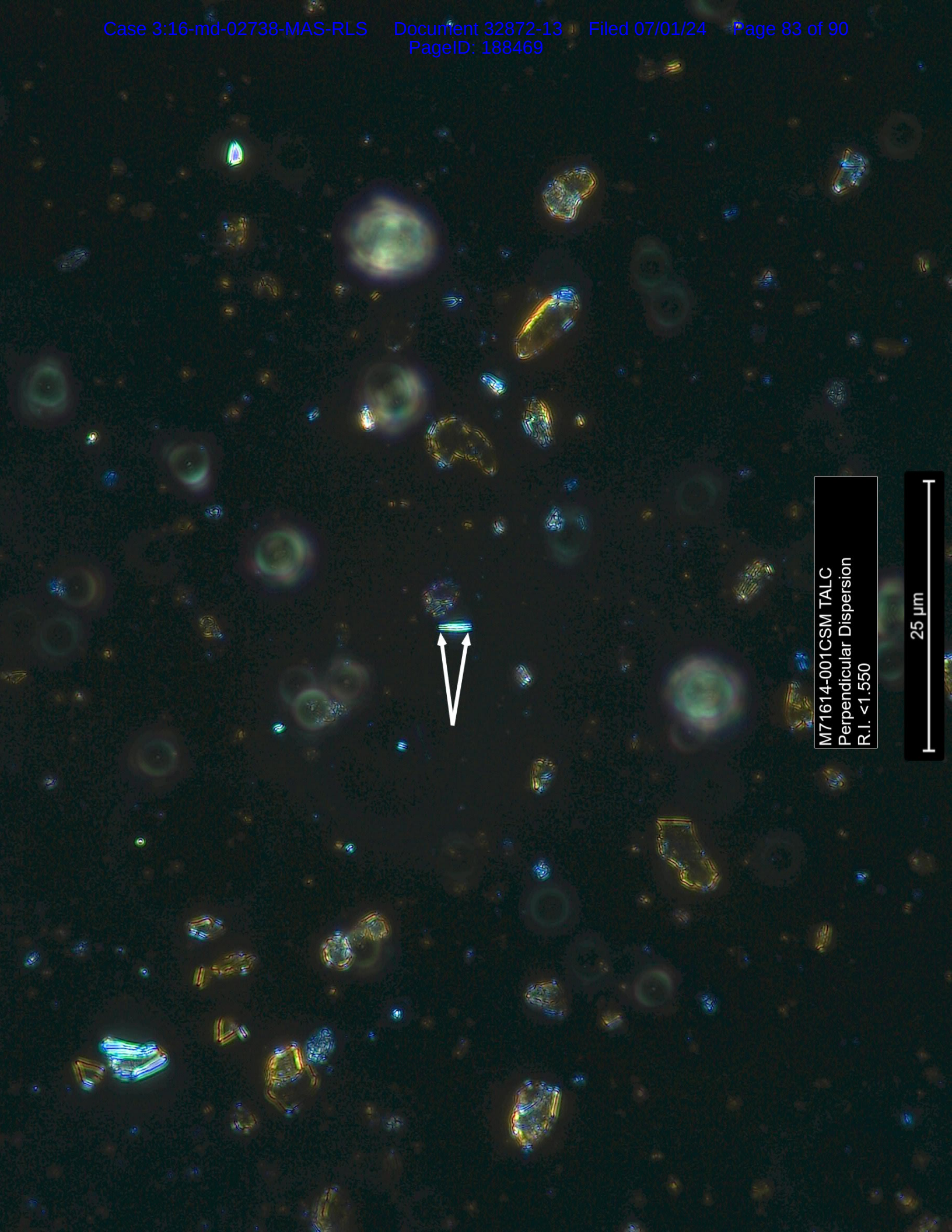
# Section 6



M71614-001CSM TALC  
Parallel Dispersion 1.560 R.I. @ 100X  
R.I. >1.595

25 μm

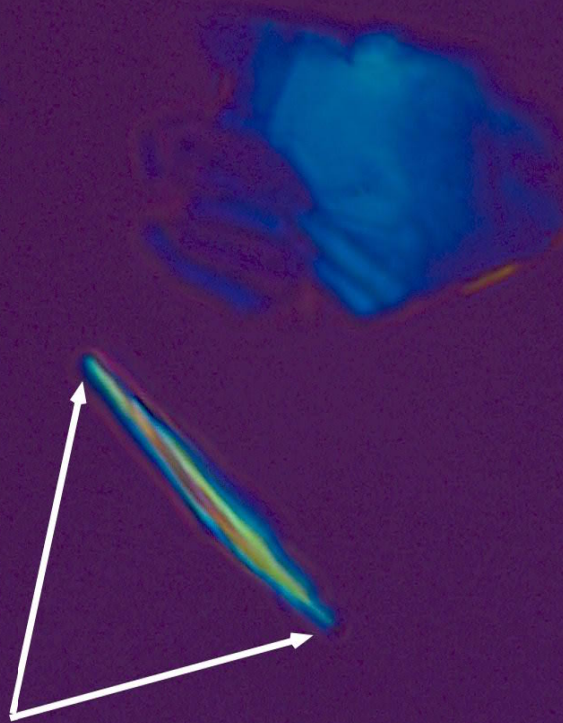




M71614-001 CSM TALC  
Perpendicular Dispersion  
R.I. < 1.550

25 μm

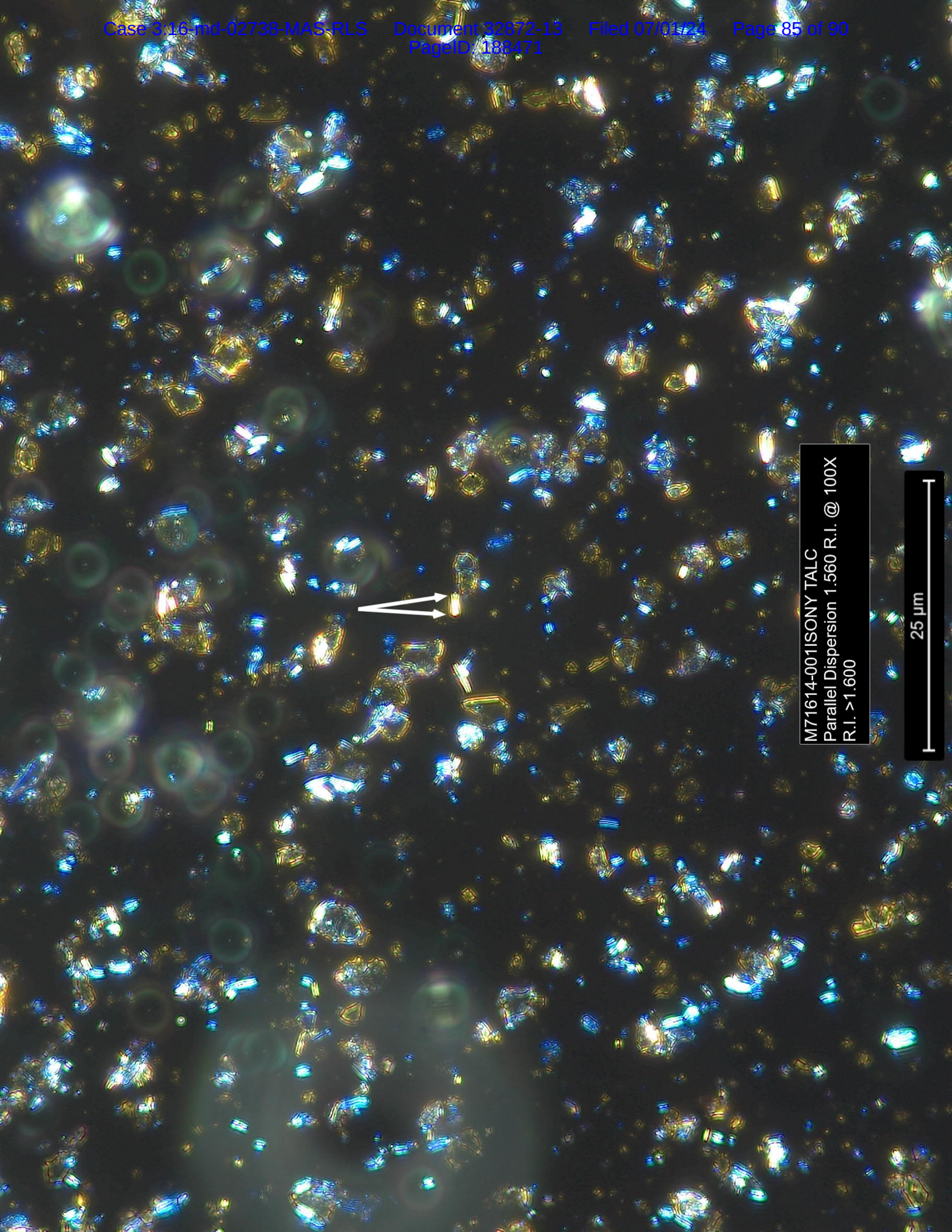




M71614-001CSM TALC  
Elongation @ 630X

2.5  $\mu\text{m}$

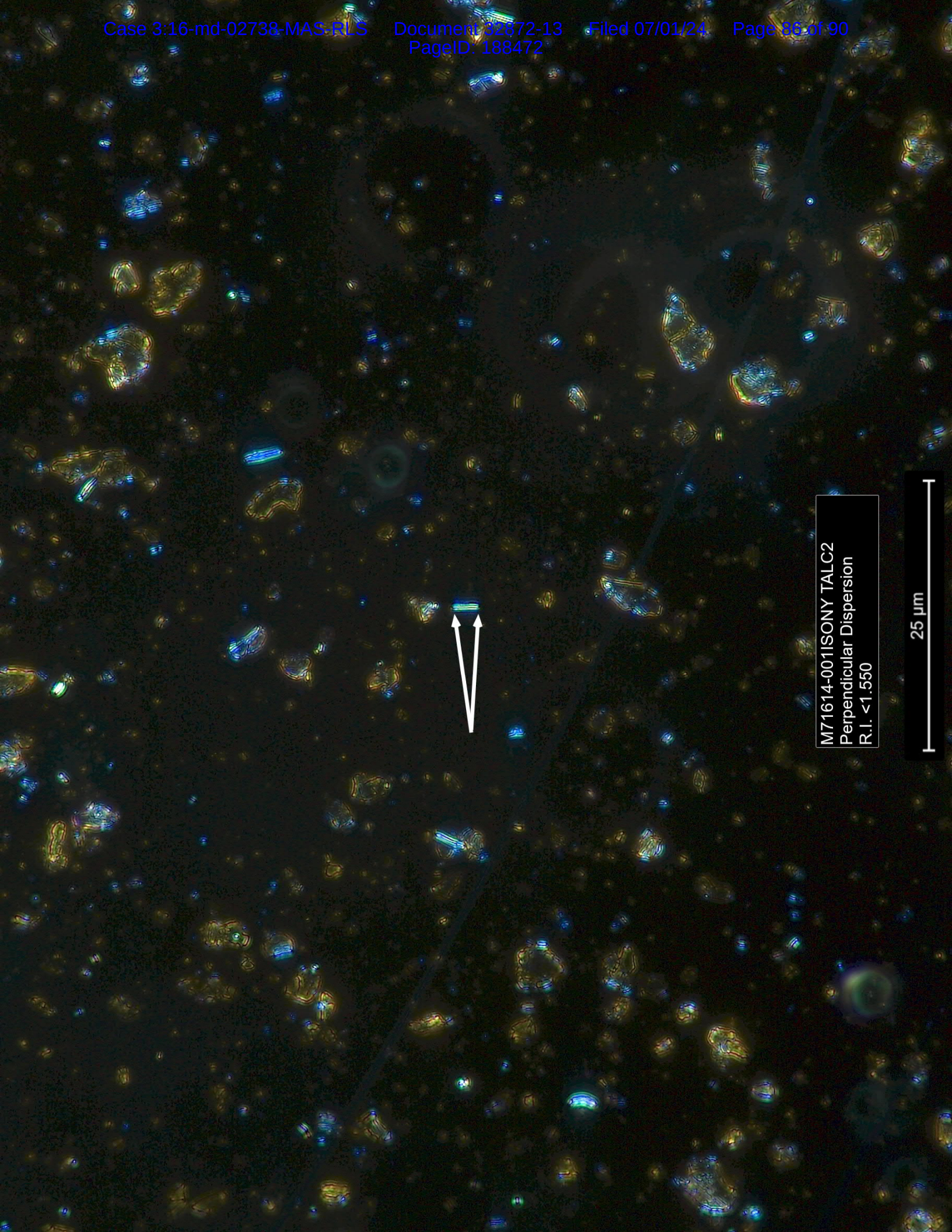




M71614-001 ISONY TALC  
Parallel Dispersion 1.560 R.I. @ 100X  
R.I. >1.600

25 μm

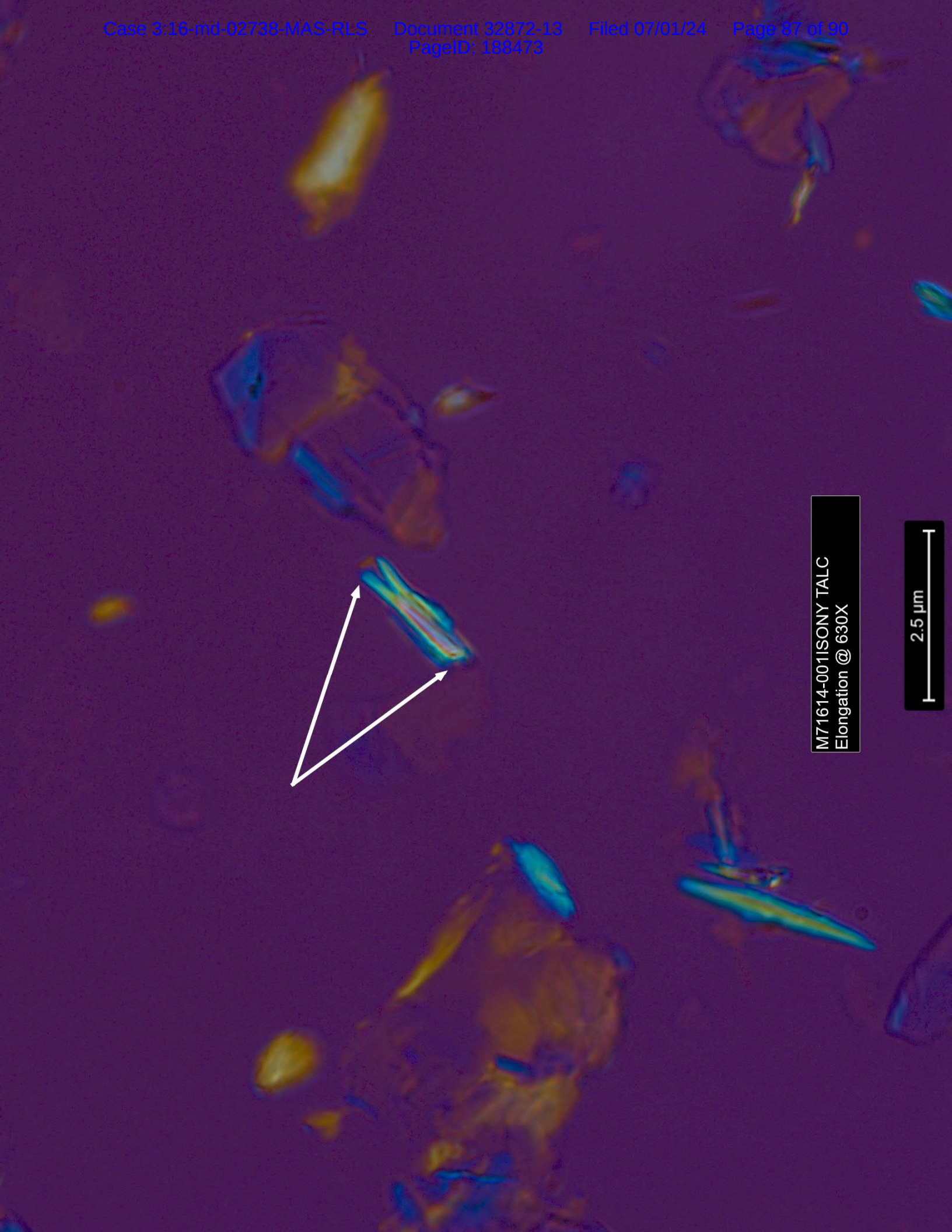




M71614-001 ISONY TALC2  
Perpendicular Dispersion  
R.I. <1.550

25 µm

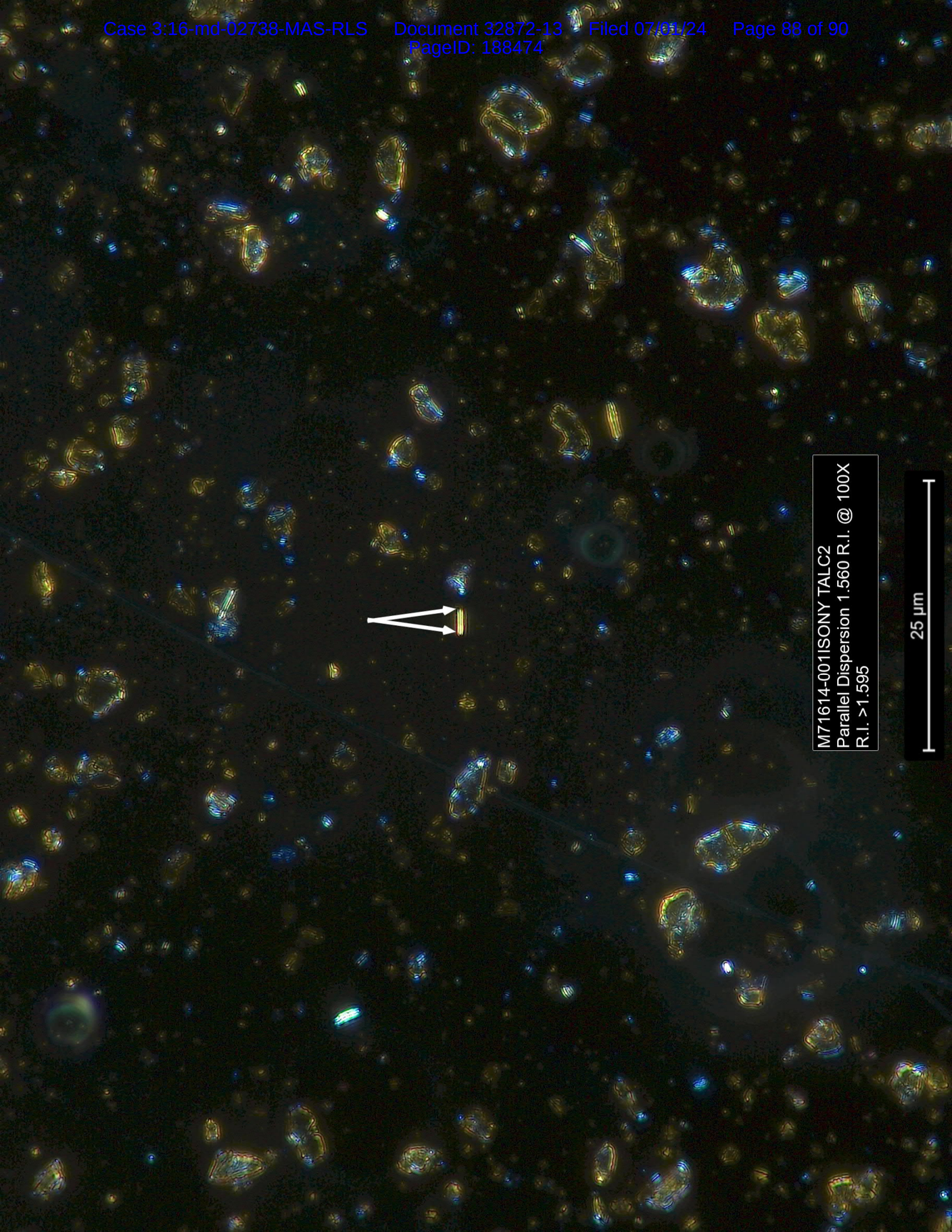




M71614-001ISONY TALC  
Elongation @ 630X

2.5  $\mu$ m

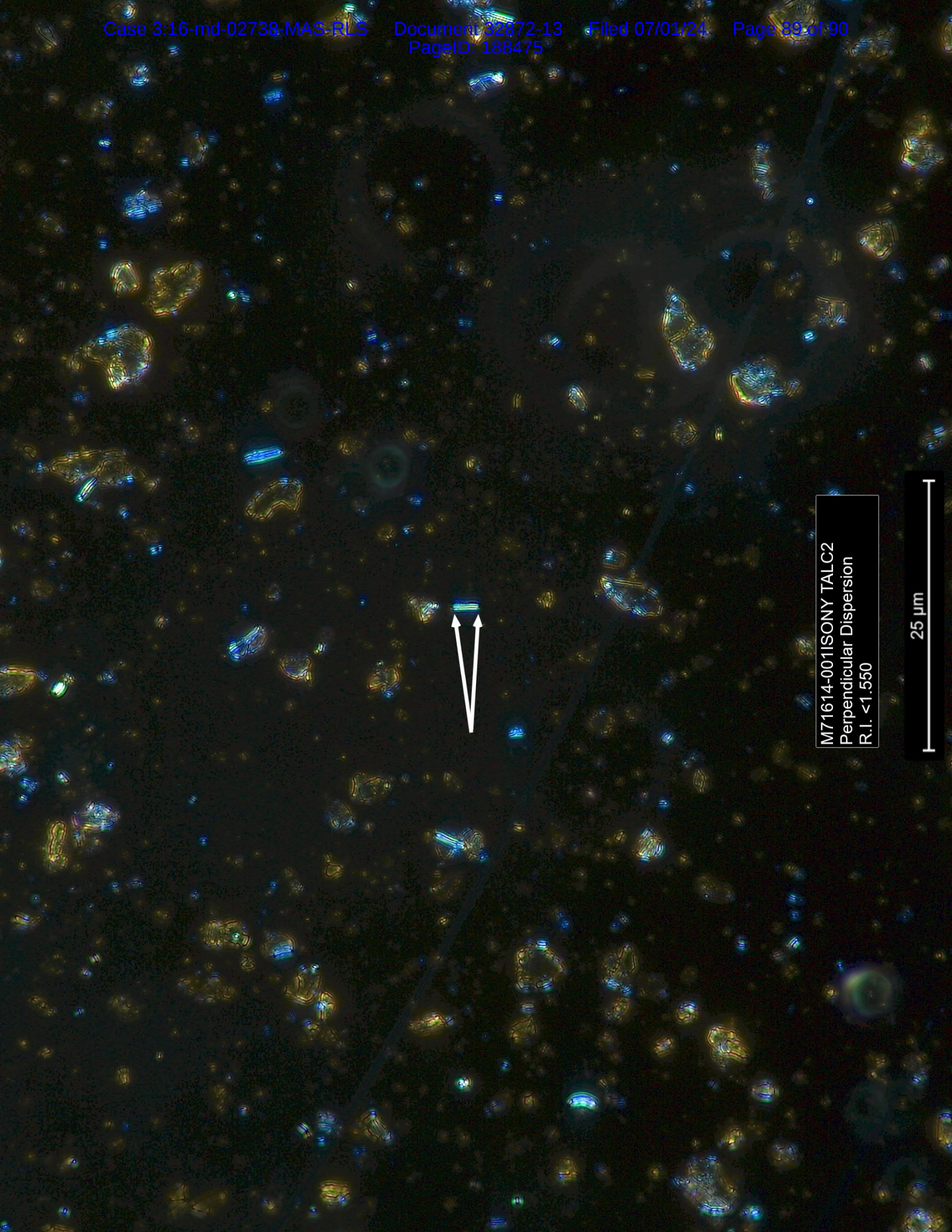




M71614-001 ISONY TALC2  
Parallel Dispersion 1.560 R.I. @ 100X  
R.I. > 1.595

25 μm

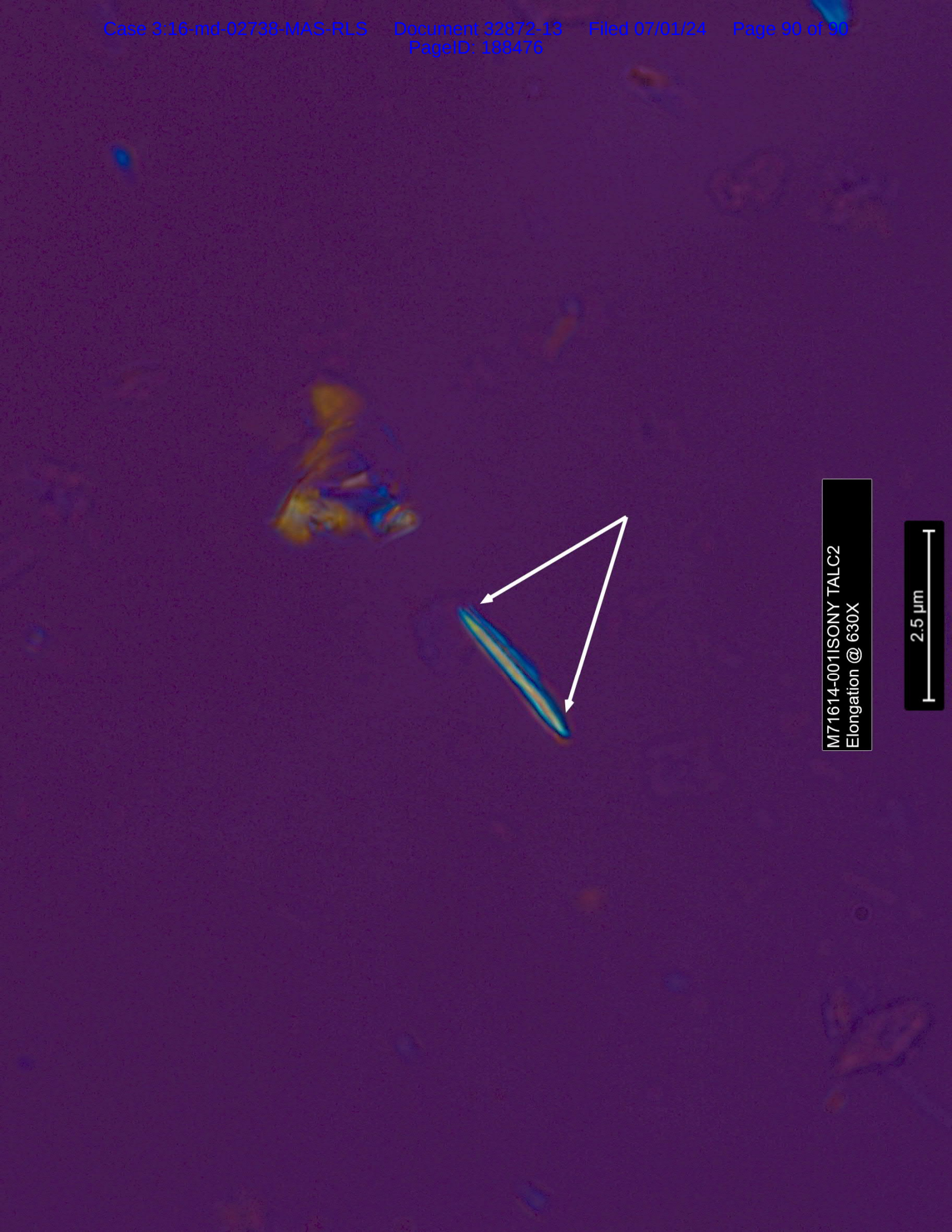




M71614-001 ISONY TALC2  
Perpendicular Dispersion  
R.I. <1.550

25 µm





M71614-001 ISONY TALC2  
Elongation @ 630X

2.5  $\mu\text{m}$